*THE*

*ADVISORY DEPARTMENT*

*IMPERIAL COLLEGE OF TROPICAL AGRICULTURE.*

IMPERIAL MYCOLOGICAL
2 OCT. 1935
INSTITUTE

# REPORT

ON THE

# Agricultural Department

# ST. KITTS-NEVIS

# 1934.

ISSUED BY THE COMMISSIONER OF AGRICULTURE

FOR THE WEST INDIES.

**1935.**

[Price Sixpence].

*THE*

*ADVISORY DEPARTMENT*

*IMPERIAL COLLEGE OF TROPICAL AGRICULTURE.*

# REPORT

ON THE

# Agricultural Department

# ST. KITTS-NEVIS

# 1934.

ISSUED BY THE COMMISSIONER OF AGRICULTURE

FOR THE WEST INDIES.

**1935.**

[Price Sixpence].

# Letter of Transmittal

C.A. 1067/35.

9th July, 1935.

Sir,

I have the honour to transmit herewith the Report of the Agricultural Department, St. Kitts-Nevis for the year ended December 31st, 1934.

2. The sugar crop continues to increase annually as the following figures show:—

| | | | |
|---|---|---|---|
| 1932 | .. | 19,969 tons | |
| 1933 | .. | 24,167 „ | |
| 1934 | .. | 28,320 „ | |
| 1935 | .. | 28,500 „ | (estimated) |

The acreage under sugar cane in 1934 was 7,630 acres, only 30 acres more than in 1933. During 1935 canes will be reaped from close on 8,000 acres. The yield per acre over the whole Island in 1934 reached the high level of 26 tons per acre.

3. The report deals in considerable detail with the experimental work that is being conducted by the Agricultural Department in co-operation with the interests concerned. At no time in the history of the industry have greater efforts been made by the leading planters to improve their agricultural methods.

4. On certain estates, however, poor cultural methods are still followed and it is only when the standard of agriculture on these properties is raised that we can hope for still further and substantial increases in exportable sugar.

5. During 1934 the exports of Sea Island cotton remained at the low figure of 270 bales but there is every hope that this type of cotton will soon again be in active demand. The representatives of the St. Kitts Cotton Association on the West Indian Sea Island Cotton Association have taken a leading part in directing the affairs of the Association.

6. The land settlement scheme in Nevis has been extended by the purchase of Hamilton estate and the indications are that this area will be quickly taken by peasant settlers.

7. The general work of the Department is being carried on with care and thoroughness and there is much evidence of its usefulness to the agricultural community.

8. In conclusion reference must be made to the continued success of the introduced Cuban parasite of the moth borer of sugar cane. First introduced by Mr. H. E. Box, Entomologist, in 1932 it was left in Mr. Mestier's hands to see that adequate numbers were reared and distributed throughout the Island. The latest report submitted by Mr. Box testifies to the efficiency of the control effected by this fly.

I have the honour to be,

Sir,

Your obedient servant,

(Sgd.) G. A. JONES,

Commissioner of Agriculture.

His Honour,
The Administrator,
ST. KITTS, B.W.I.

Digitized by the Internet Archive
in 2025

https://archive.org/details/report-agricultural-department-st-kitts-nevis_1934

## CONTENTS.


| | PAGE. |
|---|---|
| Distribution of Plants.. .. .. .. .. | 1 |
| Introduction of Plants .. .. .. .. | 1 |
| Experimental Work on Minor Crops .. .. .. | 1 |
| Insect and Fungus Pests .. .. .. .. | 2 |
| Progress in Chief Industries .. .. .. .. | 3 |
| Experimental Work with Sugar Cane .. .. .. | 4 |
| Varietal Trials with Sugar Cane .. .. .. .. | 4 |
| Manurial Trials with Sugar Cane (Plant Canes) .. .. | 12 |
| Manurial Trials with Sugar Cane (Ratoon Canes) .. .. | 15 |
| The Cotton Industry .. .. .. .. .. | 42 |
| Cotton Selection .. .. .. .. .. | 42 |
| Revenue and Expenditure .. .. .. .. | 42 |
| Staff Changes .. .. .. .. .. | 43 |
| Official Visits .. .. .. .. .. | 43 |
| Agricultural Education .. .. .. .. | 43 |
| Exports of Sugar .. .. .. .. .. | 44 |
| Exports of Cotton .. .. .. .. .. | 45 |
| Exports of Agricultural Produce .. .. .. | 46 |
| Meteorology .. .. .. .. .. .. | 47 |
| Report of the Agricultural Instructor, Nevis .. .. .. | 51 |
| Distribution of plants and seeds .. .. .. .. | 51 |
| Vegetable Industry .. .. .. .. .. | 52 |
| Cotton Selection .. .. .. .. .. | 52 |
| Insect and Fungus Pests .. .. .. .. | 52 |
| Progress of Chief Industries .. .. .. .. | 53 |
| Live Stock .. .. .. .. .. .. | 55 |
| Vegetable Bureau .. .. .. .. .. | 55 |
| Purchasing of Peasants' Cotton .. .. .. .. | 56 |
| Land Settlement .. .. .. .. .. | 56 |
| Report of the Agricultural Instructor, Anguilla .. .. | 61 |

## STAFF OF THE AGRICULTURAL DEPARTMENT, ST. KITTS-NEVIS.

| | |
|---|---|
| Agricultural Superintendent .. .. .. | R. E. Kelsick. |
| Assistant Agricultural Officer .. .. .. | G. B. Gregory, D:I.C.T.A. (Trinidad). |
| Agricultural Instructor, Nevis .. .. .. | W. I. Howell. |
| Agricultural Instructor, Anguilla .. .. | E. O. R. Lake. |
| Assistant Clerk .. .. .. .. | P. Carter (to 13th March) |
| | G. Brand (14th March to 5th May). |
| | L. C. W. Greaves (7th May to 22nd December). |

# Report of the Agricultural Department, St. Kitts-Nevis,

## For the year ended 31st December, 1934.

### DISTRIBUTION OF PLANTS AND SEEDS.

The distribution of plants during the period under review was as follows:—

| | |
|---|---|
| Ornamental trees and plants | 295 |
| Grafted mangoes (Julie) | 56 |
| Grafted avocados | 5 |
| Budded grapefruit | 6 |
| Budded oranges | 16 |
| Budded tangerine | 1 |
| Budded limes | 11 |
| Papaw | 8 |
| Passion Fruit | 3 |
| Loquat | 3 |
| Sapodilla | 5 |

SEEDS.

| | | |
|---|---|---|
| Cotton seed | 1,053 | lbs. |
| Onion seed | 30 | „ |
| Onion seedlings | 6,000 | |
| Vegetable seeds | 1,178 | pkts. |
| Sugar cane plants | 8,450 | |

### INTRODUCTION OF PLANTS AND SEEDS.

The following seeds and plants were presented to the Department:—

Plants of Jacaranda caerulea by the Department of Agriculture, Trinidad; Sapodilla seeds by the Government Farm, Tobago; cuttings of Hibiscus rosa-sinensis var. Cooperi by the Department of Agriculture, Dominica; seeds of the Passion Fruit (Passiflora edulis) by the United States Department of Agriculture.

### EXPERIMENTAL WORK ON MINOR CROPS.

Plots of varieties of sweet potato, yam and cassava were again grown. One of the St. Kitts sweet potato seedlings gave promising results and it is proposed to include it in a yield trial.

*Onion.* So far the effort to produce onion seed locally has not met with success.

*Cauliflower.* The trial of locally produced Indian cauliflower seed was a failure, the 'heads' produced being small and of a dark colour.

*Egg Plant.* Satisfactory results were obtained with seeds produced locally from the Black Beauty variety and further selections are being made.

*Grafted Mangoes and Citrus.* The Julie mangoes at the Station have made very satisfactory growth and the plots established in different parts of the island are also doing well. The citrus plot at Fountain estate has made satisfactory progress and some of the trees should soon flower.

## WORK CONNECTED WITH INSECT AND FUNGUS PESTS AND THEIR CONTROL.

### SUGAR CANE.

*Gumming Disease.*

The position with respect to this disease remains satisfactory.

*Mosaic Disease.*

This disease was not observed during the year.

*Small Moth Borer. (Diatraea saccharalis, Fabr.)*

During the year two surveys were made by the Entomologists who are responsible for the work on the biological control of the moth borer by the Cuban fly parasite—*Lixophaga.* One was carried out in considerable detail by Mr. H. E. Box in June and July and the other was made by Dr. Myers in November. The following extract from Dr. Myers' report on his visit to the Leeward Islands in November indicates the progress that has been made in the control of this pest.

Extract from "Report on the present position of *Lixophaga* in the Leeward Islands" by J. G. Myers, Biological Control Research Officer.

*III. The Position in St. Kitts.*

The conditions of sugar-cane growing in St. Kitts are fundamentally different from those of Antigua, and this difference is most strikingly and instructively reflected in the *Lixophaga* situation. The St. Kitts cane areas form one continuous belt right round the island. As a result, the borer and the fly are both much more evenly distributed, with a tendency, general also in Cuba and Haiti, for both to be less numerous in the drier areas.

Mr. Box, in his June-July survey, examined 103 fields, in 14 of which there was insufficient borer for a sample. He found *Lixophaga* present in 75 fields, with an average island total parasitism (including the fields without *Lixophaga*) of 18.1%. I examined 21 fields, on 19 estates scattered round the island and including all the larger properties. *Lixophaga* was found in every field where there was sufficient borer to yield an adequate sample and was present in some where the borer was much scarcer. It occurred in 19 of the 21 fields—that is, in all from which we obtained any borer at all. The average island parasitism by *Lixophaga* was 48.5%, that is, a nearly triple increase since July. This is a very remarkable result. Several fields were found with a total parasitism of over 80% and a recent parasitism as revealed by empty puparia of over 90 (in one case 95) %.

These results speak for themselves. It is evident that *Lixophaga* has found conditions in St. Kitts eminently suitable and has been enabled by the continuity of the cane areas to spread with great rapidity and uniformity, any failure of a colony being immediately made good by incoming flies from every side.

The joint infestation in St. Kitts, according to counts very carefully made at the factory, was 20.6% in 1932, 20.9% in 1933, while the figure for 1934 is not yet to hand, but the preliminary counts indicate a reduction to about half. The 1935 figure will be awaited with great interest.

An additional cause for congratulation in St. Kitts is the fact, established by the present survey, that *Lixophaga* is also parasitising the borers in wild grasses, notably Johnson grass (*Sorghum halepense*), locally known as "oat grass."

These rapid and remarkable results in St. Kitts are unquestionably due very largely to the energy, enthusiasm and skill of Mr. J. E. Mestier, in breeding and distributing flies till they were colonised in nearly every part of the island.

### COTTON.

The cotton leaf worm (*Alabama argillacea*) was not observed during the season.

The pink bollworm (*Pectinophora gossypiella*) was not as prevalent as during the previous season and it was only the cotton of the later planted fields that was seriously damaged by this pest.

## PROGRESS IN CHIEF INDUSTRIES.

### THE SUGAR CANE INDUSTRY.

An excellent sugar crop, which exceeded the record crop of the previous season by about 4,000 tons, was produced in 1932-34. The average rainfall of the island for 1933 was 63.97 inches, being about 8 inches above the average of the past twenty years. The rainfall during the latter part of 1932 was ample for establishing the crop and from April, 1933, the distribution of rainfall was satisfactory. October was dry but the low rainfall of this month was offset to some extent by the heavy rains throughout the island at the end of September. The good rainfall in January and March, 1934, helped to maintain weights during the reaping season.

From estates' returns the acreage reaped for the crop was 7,630 acres which was only about 30 acres more than the acreage harvested in the previous season. The cane produced amounted to 200,210 tons equivalent to an average yield of 26.23 tons per acre. The St. Kitts (Basseterre) Sugar Factory manufactured 28,320 tons of gray crystal sugar (96°) from 204,349 tons of cane supplied by growers in St. Kitts and Nevis. This output is equivalent to an average yield of 3.63 tons of sugar per acre. This was a record crop for the island, total output and yield per acre of both cane and sugar exceeding all previous records The increase in production over the previous crop may be attributed to satisfactory weather during the growing season and the absence of damage by storms, exceptionally favourable weather during the reaping season resulting in a very high quality of the cane juice (average purity 87.6%); high recovery of sugar by the Factory (7.21 tons of cane per ton of sugar) and an increase in the quantity of canes supplied by Nevis peasants. The higher juice purity obtained this season may in part be due to some reduction in borer infestation as a result of control by the recently introduced parasite fly, *Lixophaga diatraea*.

The sugar was sold at an average price of £9 3. 5. per ton f.o.b. which was nearly 15/- per ton less than the price obtained for the previous crop. Under the new terms arranged with the St. Kitts (Basseterre) Sugar Factory contracting growers received a first payment of 14/- per ton for their canes and a deferred payment from profits of 1s. 5.9d. per ton, making a total payment of 15s. 5.9d per ton.

For the 1933-35 crop it is estimated that somewhat over 8,000 acres will be reaped in St. Kitts. The average rainfall of 1934 was only 55 inches and it is not likely that production will reach the record crop of 1934.

## EXPERIMENTAL WORK WITH SUGAR CANE UNDERTAKEN BY THE DEPARTMENT IN CO-OPERATION WITH THE SUGAR CANE INVESTIGATION COMMITTEE.

The results of the following experiments laid down by the Department in 1933 and 1934 in co-operation with the Sugar Cane Investigation Committee are recorded in this Report.

| | | |
|---|---|---|
| *Variety Trials.* | | |
| Plant Canes .. .. .. | | Four experiments. |
| *Manurial Trials.* | | |
| Plant Canes .. .. .. | | Six experiments. |
| Ratoon Canes .. .. .. | | Two experiments. |
| *Megass (mulching)* | | |
| Plant Canes .. .. .. | | Two experiments. |
| Ratoon Canes .. .. .. | | Two experiments. |
| *Liming.* | | |
| Plant Canes .. .. .. | | Two experiments. |
| *Distance of Planting.* | | |
| Plant Canes .. .. .. | | Two experiments. |
| *Close Ploughing.* | | |
| Plant Canes. .. .. .. | | Two experiments. |
| *Molasses.* | | |
| Plant Canes .. .. .. | | One experiment. |

All of these experiments were planned by Mr. P. E. Turner, M.Sc., F.I.C. Adviser in Sugar Cane Experiments to the Commissioner of Agriculture.

## VARIETY TRIALS.

Variety trials with plant canes were carried out at the following stations: Camp and College Estates (dry area) and Molineux and Belmont Estates (wet area).

*Camp Estate.* At this station the new Barbados seedling B.2935 was tried against S.C. 12.4, which is the variety that is largely grown on the dry areas of the Valley and other low lying districts.

## TABLE I.

The monthly rainfall during the growth period is given below:

RAINFALL AT CAMP ESTATE.

| Month | 1933-35 Inches |
|---|---|
| 1933 | |
| November .. .. .. | 9.10 |
| December .. .. .. | 6.57 |
| 1934 | |
| January .. .. .. | 5.31 |
| February .. .. .. | 0.52 |
| March .. .. .. | 4.26 |
| April .. .. .. .. | 0.23 |
| May .. .. .. .. | 1.16 |
| June .. .. .. .. | 1.13 |
| July .. .. .. .. | 8.37 |
| August .. .. .. | 3.59 |
| September .. .. .. | 7.94 |
| October .. .. .. | 1.36 |
| November .. .. .. | 8.19 |
| December .. .. .. | 4.78 |
| 1935 | |
| January .. .. .. | 1.94 |
| February .. .. .. | 1.77 |
| Total | 66.22 |

## TABLE II.

VARIETY TRIAL—CAMP ESTATE.

PLANT CANES.

Planted 7 November, 1933. Reaped 11-13 February, 1935.

Manurial Treatment: 25 tons pen manure per acre and 1 cwt Sulphate of Ammonia per acre on 2nd February, 1934 and 2 cwts of the same manure on the 19 May, 1934.

| Variety. | Cane. | | Extraction | Sucrose in juice | Purity. | Sucrose in juice. | Sucrose in juice |
|---|---|---|---|---|---|---|---|
| | Tons per acre. | Per cent. of Mean. | Per cent. | lbs. per gallon. | | lbs. per acre. | Tons per acre. |
| B. 2935 | 47·71 | 114·0 | 62·4 | 1·599 | 85·9 | 9,950 | 4·44 |
| S.C. 12·4 | 36·00 | 86·0 | 58·4 | 1·774 | 88·9 | 7,770 | 3·47 |
| Means | 41·86 | 100·0 | 60·4 | 1·687 | 87·4 | 8,860 | 3·96 |

System of Replication: .. .. Six randomised blocks, each variety repeated twice in each block.

Area of each plot: .. .. .. 1/30th acre weighed. Border rows discarded.

Soil: .. .. .. .. Sandy loam.

The data in the above table are the means of 12 plots or analyses. The Standard Error of the difference between any two mean yields is 1.50 tons cane per acre and a difference of 3.20 tons per acre may be regarded as significant with a 20 : 1 probability.

## TABLE III

RAINFALL AT COLLEGE ESTATE.

| Month. | Average Rainfall 1919-34 Inches. | Rainfall crop period Nov. '33. to April, '35. Inches Excess or Deficit. |
|---|---|---|
| | | 1933. |
| November ... ... ... | 7·43 | + 2·12 |
| December ... ... ... | 4·67 | + 0·83 |
| | | 1934. |
| January ... ... ... | 3.49 | + 3·11 |
| February ... ... ... | 1·89 | – 1·24 |
| March ... ... ... | 2·56 | + 1·14 |
| April ... ... ... | 3·67 | – 3·62 |
| May ... ... ... | 3·88 | – 2·78 |
| June ... ... ... | 3·99 | – 2·34 |
| July ... ... ... | 5·23 | + 1·30 |
| August ... ... ... | 5·43 | + 0·60 |
| September ... ... ... | 6·27 | – 1·17 |
| October ... ... ... | 6·00 | – 4·10 |
| November ... ... ... | 7·43 | + 2·12 |
| December ... ... ... | 4·67 | + 0·83 |
| | | 1935. |
| January ... ... ... | 3·49 | – 0·69 |
| February ... ... ... | 1·89 | + 0·61 |
| March ... ... ... | 2·56 | – 1·31 |
| April ... ... ... | 3·67 | – 2·22 |
| Total ... ... | 78·22 | – 6·81 |

## TABLE IV

### VARIETY TRIAL—COLLEGE ESTATE.

PLANT CANES.

Planted 25—27 November, 1933. Reaped 20—23 February, 1935.
Manurial Treatment—25 tons pen manure per acre before planting and 3 cwts. Sulphate of Ammonia per acre, 1 cwt. early and 2 cwts. late.

| Variety. | Cane. | | Extraction | Sucrose in juice | Purity | Sucrose in juice | Sucrose in juice |
|---|---|---|---|---|---|---|---|
| | Tons per acre. | Per cent. of Mean. | Per cent. | lbs per gallon. | | lbs. per acre. | Tons per acre. |
| B. 2935 | 39·62 | 111·2 | 63·0 | 1·838 | 89·8 | 9,520 | 4·25 |
| P.O.J. 2878 | 37·25 | 104·5 | 56·6 | 1·922 | 89·9 | 8,410 | 3·75 |
| G. 119 | 36·23 | 101·6 | 59·2 | 1·686 | 88·8 | 7,550 | 3·37 |
| B. 726 | 33·37 | 93.7 | 57·9 | 2·039 | 91·8 | 8,130 | 3·63 |
| S. C. 12·4 | 31·70 | 89·0 | 57·0 | 1·905 | 90·8 | 7,140 | 3·19 |
| Means | 35·63 | 100·0 | 58·7 | 1·878 | 90·2 | 8,150 | 3·64 |

System of Replication: .. .. Two 5 x 5 Latin Squares.
Area of each plot: .. .. .. 1/30th acre weighed. Border rows discarded.
Soil .. .. .. .. Sandy loam.

The data in the above table are the means of 10 plots or analyses. The Standard Error of the difference between any two mean yields is 1.20 tons cane per acre and a difference of 2.48 tons per acre may be regarded as significant with a 20 : 1 probability.

## TABLE V

### VARIETY TRIAL—COLLEGE ESTATE.

PLANT CANES.

Planted 25—27 November, 1933. Reaped 9—13 May, 1935.

Manurial Treatment: 25 tons pen manure per acre before planting and 3 cwts. Sulphate of Ammonia per acre, 1 cwt. early and 2 cwts. late.

| Variety. | Cane. | | Extraction | Sucrose in juice | Purity. | Sucrose in juice | Sucrose in juice |
|---|---|---|---|---|---|---|---|
| | Tons per acre. | Per cent. of Mean. | Per cent. | lbs. per gallon. | | lbs. per acre. | Tons per acre. |
| P.O.J. 2878 | 38·99 | 123·3 | 56·0 | 2·053 | 88·9 | 9,240 | 4·13 |
| B. 2935 | 33·29 | 105·2 | 60·1 | 1·963 | 88·3 | 8,110 | 3·62 |
| B. 726 | 30·00 | 94·9 | 56·2 | 2·320 | 92·1 | 8,000 | 3·57 |
| S. C. 12·4 | 29·63 | 93·7 | 54·8 | 2·093 | 90·5 | 7,000 | 3·13 |
| G. 119 | 26·20 | 82·9 | 58·4 | 1·856 | 87·5 | 5,890 | 2·63 |
| Means | 31·62 | 100·0 | 57·1 | 2·057 | 89·5 | 7,650 | 3·42 |

System of Replication: .. .. Two 5 x 5 Latin Squares.

Area of each plot: .. .. .. 1/30th acre weighed. Border rows discarded.

Soil: .. .. .. .. Sandy Loam.

The data in the above table are the means of 10 plots or analyses. The Standard Error of the difference between any two mean yields is 1.55 tons cane per acre and a difference of 3.20 tons per acre may be regarded as significant with a 20:1 probability.

## TABLE VI

RAINFALL AT BELMONT AND MOLINEUX ESTATES.

| Stations. | Belmont. | | Molineux. | |
|---|---|---|---|---|
| Month. | Average Rainfall 1920-34 Inches. | Rainfall crop period Nov. '33 to March 35, Inches. Excess or deficit. | Average Rainfall 1919-34 Inches. | Rainfall crop period Nov. '33 to Feb. '35, Inches. Excess or deficit. |
| | | 1933. | | 1933. |
| November ... ... | 7·27 | + 8·74 | 7·92 | + 5·71 |
| December ... ... | 4·61 | + 1·93 | 4·79 | + 1·09 |
| | | 1934. | | 1934. |
| January ... ... | 3·04 | + 1·56 | 3·60 | + 2·72 |
| February ... ... | 2·51 | − 0·03 | 2·51 | − 0·49 |
| March ... ... | 3·54 | + 4·54 | 3·44 | + 3·03 |
| April ... ... | 4·67 | − 3·33 | 5·37 | − 3·86 |
| May ... ... | 5·46 | − 3·26 | 4·34 | + 0·32 |
| June ... ... | 4·93 | − 2·62 | 4·56 | − 1·88 |
| July ... ... | 5·69 | + 4·98 | 5·34 | + 2·87 |
| August ... ... | 6·98 | + 2·34 | 5·90 | − 1·97 |
| September ... ... | 7·75 | + 1·45 | 7·89 | + 0·23 |
| October ... ... | 7·24 | + 0·04 | 6·80 | − 4·83 |
| November ... ... | 7·27 | + 1·35 | 7·92 | + 1·02 |
| December ... ... | 4·61 | + 2·43 | 4·79 | + 2·95 |
| | | 1935. | | 1935. |
| January ... ... | 3·04 | − 0·67 | 3·60 | − 0·13 |
| February ... ... | 2·51 | + 0·12 | 2·51 | + 0·55 |
| March ... ... | 3·54 | − 2·39 | − | − |
| Total ... ... | 84·66 | + 17·18 | 81·28 | + 7·33 |

## TABLE VII

### VARIETY TRIAL—MOLINEUX ESTATE.

PLANT CANES.

Planted 2nd November, 1933. Reaped 25 and 26 February, 1935.

Manurial Treatment: 25 tons pen manure per acre before planting and 1 cwt Sulphate of Ammonia on 30 January, 1934 and 2 cwts Sulphate of Ammonia on 23rd May 1934.

| Variety. | Cane. | | Extraction | Sucrose in juice | Purity. | Sucrose in juice | Sucrose in juice |
|---|---|---|---|---|---|---|---|
| | Tons per acre. | Per cent. of Mean. | Per cent. | lbs. per gallon, | | lbs. per acre. | Tons per acre. |
| B. 374 | 46·23 | 105·4 | 59·6 | 1·762 | 90·8 | 10,110 | 4·51 |
| B. H. 10·12 | 44·67 | 101·8 | 60·8 | 1·860 | 92·3 | 10,550 | 4·71 |
| P.O.J. 2878 | 44·27 | 100·9 | 61·0 | 1·834 | 90·2 | 10,310 | 4·60 |
| B. 726 | 40·31 | 91·9 | 61·9 | 2·004 | 95·0 | 10,400 | 4·64 |
| Means | 43·87 | 100·0 | 60·8 | 1·865 | 92·1 | 10,340 | 4·62 |

System of Replication: .. .. Two 4 x 4 Latin Squares.

Area of each plot: .. .. .. 1/30th acre weighed. Border rows discarded.

Soil: .. .. .. .. Sandy loam.

The data in the above table are the means of 8 plots or analyses. The Standard Error of the difference between any two mean yields is 1.20 tons cane per acre and a difference of 2.61 tons per acre may be regarded as significant with a 20 : 1 probability.

## TABLE VIII

### VARIETY TRIAL—BELMONT ESTATE.

PLANT CANES.

Planted 14th November, 1933. Reaped 1—2 April, 1935.

Manurial Treatment: An application of pen manure had been given to the previous ratoon crop on the experimental field. 1 cwt of Sulphate of Ammonia per acre was applied on the 22nd March, 1934 and 2 cwts. on the 25th May, 1934.

| Variety, | Cane. | | Extraction | Sucrose in juice | Purity. | Sucrose in juice | Sucrose in juice |
|---|---|---|---|---|---|---|---|
| | Tons per acre. | Per cent. of Mean. | Per cent. | lbs. per gallon. | | lbs. per acre. | Tons per acre. |
| B. H. 10·12 | 49·99 | 111·8 | 59·7 | 1·967 | 90·1 | 12,150 | 5·42 |
| B. 726 | 47·21 | 105·6 | 60·3 | 2·122 | 91·7 | 12,450 | 5·56 |
| B. 374 | 45·42 | 101·6 | 57·3 | 1·950 | 90·2 | 10,560 | 4·71 |
| P.O.J. 2878 | 36·17 | 81·0 | 58·4 | 1·923 | 87·4 | 8,430 | 3·76 |
| Means | 44·70 | 100·0 | 58·9 | 1·991 | 89.9 | 10,900 | 4·86 |

System of Replication: .. .. Two 4 x 4 Latin Squares.

Area of each plot: .. .. .. 1/30th acre weighed. Border rows discarded.

Soil: .. .. .. .. Silty loam.

The data in the above table are the means of 8 plots or analyses. The Standard Error of the difference between any two mean yields is 1.65 tons cane per acre and a difference of 3.60 tons per acre may be regarded as significant with a 20 : 1 probability.

From these figures it will be seen that there was adequate moisture for germination of the plants but that growth was retarded by dry conditions during February to June. From July to December weather conditions were favourable except during the month of October when there was a severe drought. January and February, 1935, were also very dry.

From the results recorded in Table II it will be seen that the yield of B.2935 exceeded that of S.C.12.4 by over 11 tons cane per acre and it may be safely concluded that as a plant cane, under the conditions of the experiment, B.2935 is a significantly better variety than S.C.12.4. B.2935 appears to be a late maturer and the quality of its juice at the time of reaping was rather poor.

*College Estate.* At this station the following five varieties were under trial: P.O.J.2878, B.2935, B.726, S.C.12.4 and G.119. The experiment consisted of four 5 x 5 latin squares, two of which were reaped early and two late.

The monthly rainfall during the growth period and the mean monthly rainfall at this station for the period 1918-1934 are given in Table III. It will be seen that favourable weather was obtained for germination but that from February to June moisture was deficient. With the exception of October the weather from July to December was moderately good. January and February, 1935, were dry.

There was some difficulty in establishing the plots of B.2935 as the germination of the plants, which were imported from Barbados, was very poor and much supplying had to be done.

The results are summarised in Tables IV and V. At early reaping B.2935 gave the heaviest tonnage of cane and of sucrose. The yield of cane of this variety was not significantly better than the yield of P.O.J. 2878 but definitely better than the yields of G.119, B.726 and S.C.12.4.

At late reaping (Table V) P.O.J.2878 and B.2935 were again the best varieties. B.726 maintained its reputation as a variety of very high quality juice. The plots of G.119 contained considerable quantities of rotten canes and this variety is definitely not suitable for late cutting.

*Molineux and Belmont Estates.* At these stations the following varieties were under trial: B.H.10.12, B.726, P.O.J.2878 and B.374.

The monthly rainfall during the growth period and the mean monthly rainfall at these stations are given in Table VI. Rainfall for germination was good but the canes suffered from lack of moisture during the early period of growth and at Molineux there was a severe drought in October. The early months of 1935 were dry.

The results are summarised in Tables VII and VIII. At Molineux the varieties B.374, B.H.10.12 and P.O.J.2878 were defintiely better than B.726 and at Belmont B.H.10.12, B.726 and B.374 were better than P.O.J.2878. At this latter station a large number of the stools of P.O.J.2878 had been uprooted by the wind.

## MANURIAL TRIALS.

It is not proposed to discuss in any detail in this report the results of these trials. After Mr. Turner has had an opportunity of reviewing the results of the whole series of experiments a summary of the conclusions arrived at will be published in the annual report for 1935.

## EFFECT OF PEN MANURE AND SULPHATE OF AMMONIA ON THE YIELD OF PLANT CANES.

Four experiments were laid down to determine the effect of pen manure used in combination with Sulphate of Ammonia on the yield of plant canes. Two of these experiments were located on estates of low average rainfall (Buckleys and Caines) and two on estates with high rainfall (Belmont and Bellevue).

The monthly rainfall during the growth period and the mean monthly rainfall are given in Tables IX and X. It will be seen that the distribution of rainfall was unsatisfactory although the total rainfall was well above the average at Caines, Belmont and Bellevue.

The results are summarised in Table XI, XII, XIII and XIV. The results at Buckleys appear to confirm the conclusions set out in last year's report, that maximum yields are obtained when pen manure is used in combination with 2 cwts of sulphate of ammonia applied in one dose at the commencement of the rainy season. The results at the three other stations are not significant.

## MANURIAL TREATMENT OF UN-PENMANURED UPPER LANDS.

Two experiments were carried out to investigate the manurial requirements of the upper lands which do not receive applications of pen manure. One experiment was laid down on Bourkes Estate which is in a dry area and the other on Hope Estate, which is a high estate with heavy rainfall.

Information regarding the rainfall at Bourkes is given in Table XV and it will be seen that the precipitation during the growth period was somewhat above the average. Rainfall figures for Hope estate are not available.

The results of the experiments are summarised in Tables XVI and XVII. The results at Bourkes were not significant but at Hope there was a significant response to Nitrogen and Potash manuring. These results confirm the opinion expressed in last year's report that the majority of the upper lands are deficient in potash and should respond to applications of this manure. The soil of the experimental field at Hope was found to contain 0.162 per cent. exchangeable Calcium (CaO) and 0.008 per cent of exchangeable Potash ($K_2O$) on leaching with semi-normal acetic acid.

## SPACING EXPERIMENTS.

Two experiments were carried out to determine the effect on yield of different spacings between plants in the row. One experiment was laid down on Stapleton Estate, which is situated on the higher lands of the Valley District and receives a moderately high average rainfall and the other on Canada Estate where conditions are generally very dry.

The monthly rainfall during the growth period and the mean monthly rainfall are given in Table XVIII. It will be seen that at both stations the rainfall was somewhat below the average.

The results are summarised in Tables XIX and XX. The results at Stapleton are not significant. At Canada the highest yield was obtained from the widest spacing and planters would be advised not to adopt too close planting in areas of low rainfall. The uncertainty of the island's rainfall makes it difficult to make definite recommendations but a medium planting distance of say 4½ feet by 3½ feet would probably be the best under average rainfall conditions.

## MEGASS AS A MULCH FOR PLANT CANES.

Two experiments were conducted to determine the effect on the yield of plant canes of megass applied as a mulch on the banks. Both experiments were laid down on estates in the dry area, West Farm and College.

The rainfall during the growth period and the average monthly rainfall are given in Table XXI. It will be seen that the rainfall at West Farm was above the average but that at College it was much below.

The results are summarised in Tables XXII and XXIII. The highest yields were obtained when every bank was mulched with the megass. At West Farm the 3 inch layer gave a higher yield than the 2 inch layer but at College there was very little difference between the average yields of the plots with 2 inch and 3 inch layers on every bank. It has to be remembered that the plots with the 3 inch layer of megass on every bank received a much smaller dressing of sulphate of ammonia than the plots of the other treatments. It is doubtful whether an increase of 2 to 2½ tons of cane per acre will cover the cost of applying baled megass as a mulch to plant canes.

## CLOSE PLOUGHING VERSUS STANDARD METHOD OF PLOUGHING ON THE ISLAND.

Two experiments were carried out for the purpose of comparing close ploughing with the standard method of ploughing practised on the island. By the method of ploughing followed locally only half of the field is ploughed up with a heavy cattle plough at cultivation for a plant cane crop. Two or three cuts are made in the old banks and the furrow slice turned on the old cane stumps.

The experiments were laid down on Molineux Estate in the wet area and on Needsmust Estate in the dry area. The rainfall during the growth period and the average monthly rainfall are shown in Table XXIV. It will be seen that the rainfall at Molineux was much below the average, while at Needsmust it was slightly above.

Summaries of the results are given in Tables XXV and XXVI and it will be seen that there is no difference in the yields by the two methods of ploughing. This result may be attributed to the sandy nature of our soils and also to the fact that the unploughed banks of plant cane fields are as a rule thoroughly subsoiled more than once before the young canes have closed in so that the young roots are able to spread through the soil with very little difficulty.

## LIMING EXPERIMENTS.

Liming experiments were carried out on the upper lands of two estates in the wet district to investigate the effect on yield of applications of lime to acid soils.

The experiments were laid down on Mansion and Parsons estates. The soil of the experimental field at Mansion was found to contain 0.166 per cent of exchangeable Calcium (CaO) and 0.005 per cent of exchangeable Potash ($K_2O$) that of the field at Parsons 0.148 per cent. exchangeable Calcium (CaO) and 0.009 per cent. exchangeable Potash ($K_2O$)

Locally burnt slaked lime was used in the experiment. The lime was of poor quality and contained a fairly high percentage of unburnt limestone.

The monthly rainfall during the growth period and the mean monthly rainfall are given in Table XXVII. It will be seen that the rainfall at Mansion was below the average and that of Parsons above the average.

The results are summarised in Tables XXVIII and XXIX. Definite results were not obtained from the applications of lime at Parsons. At Mansion the average tonnage of cane on the unlimed plots was 38.16 tons cane per acre, while on the plots receiving lime the yield was 42.15 tons per acre. There was therefore an average difference in favour of liming of 3.99 tons care per acre on the plant cane crop. Owing to the poor quality of the local supply of burnt lime the question of liming will be further investigated with ground limestone imported from Trinidad.

## EXPERIMENT WITH MOLASSES AS A FERTILIZER FOR PLANT CANES.

One experiment was carried out to investigate the effect of applications of molasses on the yield of plant canes. The experiment was laid down on Estridge estate and information regarding the rainfall and a summary of the results are given in Tables XXX and XXXI.

## RATOON CANES.

Four experiments with ratoon canes were laid down but it was only possible to reap two of these as it was found that the large wooden stakes which were used to mark the plots of the other two experiments had been removed after the canes had closed in.

## EXPERIMENT TO INVESTIGATE THE EFFECT ON THE YIELD OF FIRST RATOON CANES OF MEGASS USED AS A MULCH ON ALTERNATE BANKS.

Experiments were laid down on West Farm and Douglas estates to obtain information on the effect on yield of megass used as a mulch on the alternate banks of first ratoon canes.

The rainfall during the growing season and the average monthly rainfall are given in Table XXXII. It will be seen that the rainfall was below the average at both places.

The results are summarised in Tables XXXIII and XXXIV. At Douglas estate a definite increase in yield was given by the plots mulched with megass and which had received an application of 4 cwts. of Sulphate of Ammonia.

## EXPERIMENTS WITH PLANT CANES, 1934-36 CROP.

The following experiments with plant canes for the 1934-36 crop were laid down during the year:

| | |
|---|---|
| Time of Planting .. .. .. | Bellevue and Buckleys. |
| Cross Holing .. .. .. | Mansion. |
| Optimum early dose of Sulphate of Ammonia .. .. .. | West Farm, Cranstouns and Estridge. |
| Optimum Potash .. .. .. | Willetts and Mt. Pleasant. |
| Optimum Phosphate .. .. | Lynches and Belmont. |
| Deep Ploughing .. .. .. | Douglas and Molineux. |
| Liming .. .. .. .. | Parsons and Milliken. |
| Mulching with megass .. .. | Needsmust. |
| Variety .. .. .. .. | Mansion and Douglas. |

The supervision of the reaping and weighing of the canes of the experimental plots was done by the Agricultural Assistant with the assistance of the Agricultural Instructor, Anguilla, who was transferred to St. Kitts for the period of the crop season.

The Department desires to thank estate owners and managers for all the facilities which they willingly provided during the reaping of the experiments.

## TABLE IX.

### RAINFALL AT BUCKLEYS AND CAINES ESTATES.

| Stations. | Buckleys | | Caines | |
|---|---|---|---|---|
| Month | Average rainfall 1919-34 inches | Rainfall crop period Nov. '33 to Feb. '35 inches Excess or deficit. | Average rainfall 1914—34 inches | Rainfall crop period Dec. '33 to March '35 inches Excess or deficit. |
| | | 1933 | | 1933 |
| November .. .. | 6.23 | + 4.52 | — | — |
| December .. .. | 4.45 | + 2.98 | 4.30 | + 1.52 |
| | | 1934 | | 1934 |
| January .. .. | 3.53 | + 1.82 | 2.76 | + 3.59 |
| February .. .. | 1.95 | — 0.61 | 2.09 | + 0.50 |
| March .. .. | 2.69 | — 1.88 | 2.64 | + 1.74 |
| April .. .. | 2.96 | — 2.45 | 4.26 | — 3.30 |
| May .. .. | 2.86 | — 1.66 | 4.65 | — 2.30 |
| June .. .. | 3.41 | — 1.24 | 4.49 | — 3.06 |
| July .. .. | 4.74 | + 4.42 | 5.20 | + 5.27 |
| August .. .. | 5.23 | — 1.18 | 5.32 | — 0.19 |
| September .. .. | 6.86 | — 0.66 | 6.59 | + 4.52 |
| October .. .. | 4.93 | — 3.24 | 6.14 | — 2.59 |
| November .. .. | 6.23 | + 2.10 | 7.90 | + 2.13 |
| December .. .. | 4.45 | + 1.55 | 4.30 | + 1.92 |
| | | 1935 | | 1935 |
| January .. .. | 3.53 | — 1.55 | 2.76 | — 0.39 |
| February .. .. | 1.95 | — 0.38 | 2.09 | + 0.11 |
| March .. .. | — | — | 2.64 | — 1.30 |
| Total | 66.00 | + 2.54 | 68.13 | + 8.17 |

## TABLE X.

### RAINFALL AT BELMONT AND BELLEVUE ESTATES.

| Stations | Belmont | | Bellevue | |
|---|---|---|---|---|
| Month | Average rainfall 1920-34 inches | Rainfall crop period Nov 33 to March '35 inches Excess or deficit. | Average rainfall 1914-34 inches | Rainfall crop period Dec. '33 to April '35 inches Excess or deficit |
| | | 1933 | | 1933 |
| November .. .. | 7.27 | + 8.74 | — | — |
| December .. .. | 4.61 | + 1.58 | 5.48 | + 3.82 |
| | | 1934 | | 1934 |
| January .. .. | 3.04 | + 1.56 | 3.75 | + 8.52 |
| February .. .. | 2.51 | — 0.03 | 2.48 | + 0.61 |
| March .. .. | 3.54 | + 4.54 | 3.07 | + 4.80 |
| April .. .. | 4.67 | — 3.33 | 5.10 | — 3.35 |
| May .. .. | 5.46 | — 3.26 | 5.35 | — 1.62 |
| June .. .. | 4.93 | — 2.62 | 4.62 | — 2.05 |
| July .. .. | 5.69 | + 4.98 | 5.49 | + 4.22 |
| August .. .. | 6.98 | + 2.34 | 5.13 | — 0.51 |
| September .. .. | 7.75 | + 1.45 | 7.50 | + 1.43 |
| October .. .. | 7.24 | + 0.04 | 6.75 | — 3.41 |
| November .. .. | 7.27 | + 1.35 | 8.92 | + 1.28 |
| December .. .. | 4.61 | + 2.43 | 5.48 | + 0.79 |
| | | 1935 | | 1935 |
| January .. .. | 3.04 | — 0.67 | 3.75 | + 0.02 |
| February .. .. | 2.51 | + 0.12 | 2.48 | + 0.34 |
| March .. .. | 3.54 | — 2.39 | 3.07 | — 1.88 |
| April .. .. | — | — | 5.10 | — 2.76 |
| Total | 84.66 | + 16.83 | 83.52 | + 10.25 |

## TABLE XI.

### EXPERIMENT TO ASCERTAIN THE EFFECT ON YIELD OF PLANT CANES OF PEN MANURE USED IN COMBINATION WITH SULPHATE OF AMMONIA.

Station: .. .. .. .. Buckleys Estate (dry area)

System of Replication: .. .. Two 5 x 5 Latin Squares.

Area of each plot: .. .. 1/20th acre weiged. Four border rows discarded.

Soil: .. .. .. .. Sandy Loam.

Variety: .. .. .. B.H.10.12.

Treatments: .. .. .. 1. Pen Manure. Usual dressing for the island approximately 25 tons per acre.

All plots received a basal dressing of pen manure at the rate of approximately 25 tons per acre. The manure was applied under the banks before planting.

2. Additional treatment 2 cwts of Sulphate of Ammonia per acre towards the end of the dry season.

3. Additional treatment 3 cwts of Sulphate of Ammonia per acre towards the end of the dry season.

4. Additional treatment 1 cwt Sulphate of Ammonia per acre six to eight weeks after planting and 2 cwts towards the end of the dry season.

5. Additional treatment 1 cwt Sulphate of Ammonia per acre six to eight weeks after planting and 3 cwts towards the end of the dry season.

Planted: .. .. .. 3rd and 4th November, 1933.

Reaped: .. .. .. .. 14—19th February, 1935.

SUMMARY OF RESULTS.

| Treatment No. | Treatment with Sulphate of Ammonia. | | | Yield tons cane per acre. | Per Cent of Mean | Increment tons cane. |
|---|---|---|---|---|---|---|
| | 4 Jan. | 17 May | Total | | | |
| 1 | nil | nil | nil | 30.70 | 95.1 | .. |
| 2 | nil | 2 cwts. | 2 cwts. | 33.98 | 105.3 | 3.28 |
| 3 | nil | 3 cwts. | 3 cwts. | 33.66 | 104.3 | 2.96 |
| 4 | 1 cwt. | 2 cwts. | 3 cwts. | 31.68 | 98.2 | 0.98 |
| 5 | 1 cwt. | 3 cwts. | 4 cwts. | 31.33 | 97.1 | 0.60 |
| Mean | .. | .. | .. | 32.27 | 100.0 | .. |

Each yield in the above table is the mean of 10 plots. The Standard Error of the difference between any two mean yields is 0.68 tons cane per acre and a difference of 1.39 tons per acre may be regarded as significant with a 20:1 probability.

## TABLE XII.

### EXPERIMENT TO ASCERTAIN THE EFFECT ON YIELD OF PLANT CANES OF PEN MANURE USED IN COMBINATION WITH SULPHATE OF AMMONIA.

Station: .. .. .. .. Caines Estate (Northern district).

System of Replication: .. .. Two 5 x 5 Latin Squares.

Area of each plot: .. .. 1/20th acre weighed. Four border rows discarded.

Soil .. .. .. .. Sandy Loam.

Variety: .. .. .. B.H.10.12.

Treatments per acre: .. .. All plots received a basal dressing of pen manure at the rate of approximately 25 tons per acre. The manure was applied under the banks before planting.

1. Pen manure. Usual dressing for the island approximately 25 tons per acre.
2. Additional treatment 2 cwts. of Sulphate of Ammonia per acre towards the end of the dry season.
3. Additional treatment 3 cwts. of Sulphate of Ammonia per acre towards the end of the dry season.
4. Additional treatment 1 cwt. Sulphate of Ammonia per acre six to eight weeks after planting and 2 cwts. towards the end of the dry season.
5. Additional treatment 1 cwt. Sulphate of Ammonia per acre six to eight weeks after planting and 3 cwts. towards the end of the dry season.

Planted: .. .. .. .. 16—18 December, 1933.

Reaped: .. .. .. .. 11—15 March, 1935.

Summary of Results.

| Treatment No. | Treatment with Sulphate of Ammonia. | | | Yield tons cane per acre. | Per cent. of Mean | Increment tons cane. |
|---|---|---|---|---|---|---|
| | 9 Feb. | 7 June | Total. | | | |
| 1 | nil | nil | nil | 44.16 | 98.1 | .. |
| 2 | nil | 2 cwts. | 2 cwts. | 43.51 | 96.6 | —0.65 |
| 3 | nil | 3 cwts. | 3 cwts. | 46.13 | 102.4 | 1.97 |
| 4 | 1 cwt. | 2 cwts. | 3 cwts. | 46.82 | 103.9 | 2.66 |
| 5 | 1 cwt. | 3 cwts. | 4 cwts. | 44.61 | 99.0 | 0.45 |
| Mean | .. | .. | .. | 45.05 | 100.0 | .. |

Each yield in the above table is the mean of 10 plots. By the Z test the results are not significant.

## TABLE XIII.

### EXPERIMENT TO ASCERTAIN THE EFFECT ON YIELD OF PLANT CANES OF PEN MANURE USED IN COMBINATION WITH SULPHATE OF AMMONIA.

Station: .. .. .. .. Belmont Estate (wet area).
System of Replication: .. .. One 7 x 7 Latin Square.
Area of each plot: .. .. 1/20th acre weighed. Border rows discarded.
Soil: .. .. .. .. Silty loam.
Variety .. .. .. B.H.10.12.
Treatments .. .. .. All plots received a standard dressing of pen manure (about 25 tons per acre) before planting and the following additional treatments with Sulphate of Ammonia.

1. No additional treatment.
2. 2 cwts. S/A per acre towards end of dry season '34.
3. 3 cwts. S/A per acre towards end of dry season '34.
4. 1 cwt. S/A per acre six to eight weeks after planting and 2 cwts. S/A towards end of dry season, '34.
5. 1 cwt. S/A per acre six to eight weeks after planting and 3 cwts. S/A towards end of dry season, '34.
6. 2 cwts. S/A per acre six to eight weeks after planting and 2 cwts. S/A towards end of dry season, '34.
7. 2 cwts. S/A per acre six to eight weeks after planting and 3 cwts. S/A towards end of dry season, '34.

Planted: .. .. .. .. 22nd November, 1933.
Reaped: .. .. .. .. 3—6 April, 1935.

SUMMARY OF RESULTS.

| Treatment No. | Treatment with Sulphate of Ammonia. | | | Yield tons cane per acre. | Per cent of Mean. | Increment tons cane. |
|---|---|---|---|---|---|---|
| | 25.1.34 | 25.5.34 | Total. | | | |
| 1 | nil | nil | nil | 31.01 | 92.8 | .. |
| 2 | nil | 2 cwts. | 2 cwts. | 29.16 | 87.3 | — 1.85 |
| 3 | nil | 3 cwts. | 3 cwts. | 39.28 | 117.6 | 8.27 |
| 4 | 1 cwt. | 2 cwts. | 3 cwts. | 32.12 | 96.1 | 1.11 |
| 5 | 1 cwt. | 3 cwts. | 4 cwts. | 31.95 | 95.6 | 0.94 |
| 6 | 2 cwts. | 2 cwts. | 4 cwts. | 37.64 | 112.7 | 6.63 |
| 7 | 2 cwts. | 3 cwts. | 5 cwts. | 32.72 | 97.9 | 1.71 |
| Mean | .. | .. | .. | 33.41 | 100.0 | .. |

Each yield in the above table is the mean of 7 plots. By the Z test the results are not significant.

## TABLE XIV.

### EXPERIMENT TO ASCERTAIN THE EFFECT ON YIELD OF PLANT CANES OF PEN MANURE USED IN COMBINATION WITH SULPHATE OF AMMONIA.

Station .. .. .. .. Bellevue Estate (wet area)
System of Replication .. .. Seven randomised blocks.
Area of each plot .. .. .. 1/20th acre weighed. Border rows discarded.
Soil .. .. .. .. Sandy loam.
Variety .. .. .. .. B.H.10.12.
Treatments .. .. .. All plots received a standard dressing of pen manure (about 25 tons per acre) before planting and the following additional treatments with Sulphate of Ammonia.

1. No additional treatment.
2. 2 cwts. S/A per acre towards end of dry season, 1934
3. 3 cwts. S/A per acre towards end of dry season, 1934
4. 1 cwt. S/A six to eight weeks after planting and 2 cwts. S/A/ per acre towards end of dry season, 1934.
5. 1 cwt. S/A per acre six to eight weeks after planting and 3 cwts. S/A towards end of dry season, 1934.
6. 2 cwts. S/A per acre six to eight weeks after planting and 2 cwts. S/A towards end of dry season, 1934.
7. 2 cwts. S/A per acre six to eight weeks after planting and 3 cwts S/A towards end of dry season, 1934.

Planted .. .. .. .. 15-16 December, 1933.
Reaped .. .. .. .. 24 April—1st May, 1935.

SUMMARY OF RESULTS.

| Treatment No. | Treatment with Sulphate of Ammonia. | | | Yield tons cane per acre. | Per Cent of Mean. | Increment tons cane |
|---|---|---|---|---|---|---|
| | 9.2.34 | 29.5.34 | Total. | | | |
| 1 | nil | nil | nil | 47.16 | 98.1 | .. |
| 2 | nil | 2 cwts. | 2 cwts. | 47.47 | 98.7 | 0.31 |
| 3 | nil | 3 cwts. | 3 cwts. | 49.47 | 102.9 | 2.31 |
| 4 | 1 cwt. | 2 cwts. | 3 cwts. | 46.70 | 97.2 | — 0.46 |
| 5 | 1 cwt. | 3 cwts | 4 cwts. | 48.55 | 101.0 | 1.39 |
| 6 | 2 cwts. | 2 cwts. | 4 cwts. | 49.26 | 102.4 | 2.10 |
| 7 | 2 cwts. | 3 cwts | 5 cwts. | 47.93 | 99.7 | 0.77 |
| Mean | .. | .. | .. | 48.08 | 100.0 | .. |

Each yield in the above table is the mean of 7 plots. By the Z test the results are not significant.

## TABLE XV.

RAINFALL AT BOURKES ESTATE.

| Month | Average rainfall 1914-34 inches. | Rainfall crop period Dec. '33 to Feb. '35 inches Excess or deficit. |
|---|---|---|
| | | 1933 |
| December .. .. .. | 4.73 | + 2.55 |
| | | 1934 |
| January .. .. .. | 3.72 | 0.00 |
| February .. .. .. | 2.20 | — 1.09 |
| March .. .. .. .. | 2.95 | + 1.60 |
| April .. .. .. .. | 3.66 | — 2.41 |
| May .. .. .. .. | 3.83 | — 0.49 |
| June .. .. .. .. | 3.97 | + 0.35 |
| July .. .. .. .. | 5.44 | + 1.29 |
| August .. .. .. .. | 4.93 | + 1.46 |
| September .. .. .. | 6.30 | — 0.13 |
| October .. .. .. | 5.78 | — 3.27 |
| November .. .. .. | 6.73 | + 1.53 |
| December .. .. .. | 4.73 | + 1.79 |
| | | 1935 |
| January .. .. .. | 3.72 | + 0.34 |
| February .. .. .. | 2.20 | + 0.09 |
| Total .. .. .. | 64.89 | + 3.61 |

## TABLE XVI.

### MANURIAL TREATMENT OF UN-PENMANURED UPPER LAND.

Station: .. .. .. .. Bourkes Estate

System of Replication: .. .. One 6 x 6 Latin Square.

Area of each plot: .. .. 1/20th acre weighed. Border rows discarded.

Variety .. .. .. .. B.H.10.12.

Treatments per acre: .. .. 1. 2 cwts. Sulphate of Ammonia towards end of dry season, 1934.

2. 3 cwts. Sulphate of Ammonia towards end of dry season, 1934.

3. 2 cwts. S/A 6-8 weeks after planting 2 cwts. towards end of dry season, 1934.

4. 2 cwts. S/A and 1½ cwt. Muriate of Potash 6-8 weeks after planting 2 cwts. S/A towards end of dry season, 1934.

5. 2 cwts. S/A 6-8 weeks after planting 3 cwts S/A towards end of dry season, 1934.

6. 2 cwts. S/A and 1½ cwt. Muriate of Potash 6-8 weeks after planting 3 cwts S/A towards end of dry season, 1934.

Planted .. .. .. .. 24th December, 1933.

Reaped .. .. .. .. 25th—27th February, 1935.

SUMMARY OF RESULTS.

| Treatment No. | Manurial Treatment | | | | Yield tons cane per acre | Per Cent of Mean | Increment |
|---|---|---|---|---|---|---|---|
| | | Sulphate of Ammonia | | | | | |
| | Muriate of Potash 13.2.34 | 13.2.34 | 29.5.34 | Total | | | |
| 1 | nil | nil | 2 cwts. | 2 cwts S/A | 33.08 | 94.5 | .. |
| 2 | nil | nil | 3 cwts. | 3 cwts S/A | 31.97 | 91.3 | — 1.11 |
| 3 | nil | 2 cwts. | 2 cwts. | 4 cwts S/A | 34.61 | 98.8 | 1.53 |
| 4 | 1½ cwts. | 2 cwts. | 2 cwts. | 4 cwts S/A 1½ „ M/P | 38.58 | 110.1 | 5.50 |
| 5 | nil | 2 cwts. | 3 cwts. | 5 cwts S/A | 34.29 | 97.9 | 1.21 |
| 6 | 1½ cwts. | 2 cwts. | 3 cwts. | 5 cwts S/A 1½ „ M/P | 37.64 | 107.4 | 4.56 |

Each yield in the above table is the mean of 6 plots. By the Z test the results are not significant.

## TABLE XVII.

### MANURIAL TREATMENT OF UN-PENMANURED UPPER LAND.

Station: .. .. .. .. Hope Estate (wet area)

System of Replication: .. .. One 6 x 6 Latin Square.

Area of each plot: .. .. 1/20th acre weighed. Border rows discarded.

Variety: .. .. .. B.H.10.12.

Treatments per acre: .. .. 1. 2 cwts. Sulphate of Ammonia towards end of dry season, 1934.

2. 3 cwts. Sulphate of Ammonia towards end of dry season, 1934.

3. 2 cwts. S/A 6-8 weeks after planting and 2 cwts towards end of dry season, 1934.

4. 2 cwts. S/A and 1½ cwt. Muriate of Potash 6-8 weeks after planting. 2 cwt. S/A towards end of dry season, 1934.

5. 2 cwts. S/A 6-8 weeks after planting and 3 cwts. S/A towards end of dry season, 1934.

6. 2 cwts. S/A and 1½ cwt. Muriate of Potash 6-8 weeks after planting. 3 cwts. S/A towards end of dry season, 1934.

Planted: .. .. .. .. 6-7 February, 1934.

Reaped: .. .. .. .. 25-29 March, 1935.

SUMMARY OF RESULTS.

| Treatment No. | Manurial Treatment | | | | Yield tons cane per acre | Per Cent of Mean | Increment |
|---|---|---|---|---|---|---|---|
| | Muriate of Potash 3.4.34 | Sulphate of Ammonia. 3.4.34 | Sulphate of Ammonia. 21.6.34 | Total | | | |
| 1 | nil | nil | 2 cwts. | 2 cwts S/A | 28.98 | 82.8 | .. |
| 2 | nil | nil | 3 cwts. | 3 cwts S/A | 32.59 | 93.1 | 3.61 |
| 3 | nil | 2 cwts. | 2 cwts. | 4 cwts S/A | 35.65 | 101.9 | 6.67 |
| 4 | 1½ cwts. | 2 cwts. | 2 cwts. | 4 cwts S/A 1½ „ M/P | 38.16 | 109.1 | 9.18 |
| 5 | nil | 2 cwts. | 3 cwts. | 5 cwts S/A | 35.38 | 101.1 | 6.40 |
| 6 | 1½ cwts. | 2 cwts. | 3 cwts. | 5 cwts S/A 1½ „ M/P | 39.18 | 112.0 | 10.20 |
| Mean | .. | .. | .. | .. | 34.99 | 100.0 | .. |

Each yield in the above table is the mean of six plots. The Standard Error of the difference between any two mean yields is 1.56 tons cane per acre and a difference of 3.25 tons may be regarded as significant with a 20 : 1 probability.

## TABLE XVIII.

### RAINFALL AT CANADA AND STAPLETON ESTATES.

| Stations. | Canada. | | Stapleton. | |
|---|---|---|---|---|
| Month. | Average rainfall 1914-34 inches. | Rainfall crop period Dec. '33 to Feb '35 inches Excess or deficit. | Average rainfall 1914-34 inches. | Rainfall crop period Jan. '34 to April '35 inches Excess or deficit. |
| | | 1933 | | |
| December .. .. | 3.37 | — 0.12 | .. | .. |
| | | 1934 | | 1934 |
| January .. .. | 2.29 | + 2.41 | 3.69 | + 5.93 |
| February .. .. | 1.53 | — 0.68 | 2.40 | — 0.49 |
| March .. .. | 1.84 | + 0.33 | 2.76 | + 2.31 |
| April .. .. .. | 2.23 | — 1.43 | 3.41 | — 2.94 |
| May .. .. .. | 2.67 | — 1.37 | 3.04 | — 1.60 |
| June .. .. .. | 3.17 | — 1.23 | 4.29 | — 1.52 |
| July .. .. .. | 4.18 | + 0.07 | 5.03 | + 1.00 |
| August .. .. | 3.86 | — 0.41 | 5.90 | + 1.20 |
| September .. .. | 4.75 | — 1.25 | 6.64 | — 0.02 |
| October .. .. | 4.86 | — 3.16 | 6.00 | — 3.04 |
| November .. .. | 5.50 | + 4.00 | 6.39 | + 4.84 |
| December .. .. | 3.37 | + 0.78 | 4.96 | + 0.56 |
| | | 1935 | | 1935 |
| January .. .. | 2.29 | — 0.36 | 3.69 | — 0.42 |
| February .. .. | 1.53 | — 0.38 | 2.40 | — 1.13 |
| March .. .. | .. | .. | 2.76 | — 2.24 |
| April .. .. .. | .. | .. | 3.41 | — 2.82 |
| Total .. .. | 47.44 | — 2.80 | 66.77 | — 0.38 |

## TABLE XIX.

### EXPERIMENT TO DETERMINE THE EFFECT ON YIELD OF PLANT CANES OF DIFFERNT SPACINGS BETWEEN PLANTS IN THE ROW.

Station: .. .. .. .. Canada Estate (dry area)

System of Replication: .. .. Four 3 x 3 Latin Squares.

Area of each plot: .. .. .. 1/20th acre weighed. Border rows discarded.

Variety: .. .. .. .. S.C.12. 4.

Treatments: .. .. .. 1. Distance between banks 4½ feet and between cross holes 2 feet.

2. Distance between banks 4½ feet and between cross holes 3 feet.

3. Distance between banks 4½ feet and between cross holes 4 feet.

Manurial treatment: .. .. All plots received a dressing of pen manure at the rate of about 25 tons per acre before planting, an early dressing of Sulphate of Ammonia at the rate of 1 cwt. per acre on the 5th March, 1934 and a dressing at the rate of 3 cwts. of Sulphate of Ammonia per acre on the 8th June, 1934.

Planted: .. .. .. .. 6-7 December, 1933.

Reaped: .. .. .. .. 5-8 March, 1935.

SUMMARY OF RESULTS.

| Treatment No. .. | 1 | 2 | 3 | |
|---|---|---|---|---|
| Planting distances | 4½ × 2 ft. | 4½ × 3 ft. | 4½ × 4 ft. | Mean. |
| Tons Cane per acre . | 31.79 | 34.37 | 36.14 | 34.10 |
| Per Cent of Mean .. | 93.2 | 100.8 | 106.0 | 100.0 |

Each yield in the above table is the mean of 12 plots. The Standard Error of the difference between any two mean yields is 1.36 tons cane per acre and a difference of 3.13 tons per acre may be regarded as significant with a 20 : 1 probability.

## TABLE XX.

### EXPERIMENT TO DETERMINE THE EFFECT ON YIELD OF PLANT CANES OF DIFFERNT SPACINGS BETWEEN PLANTS IN THE ROW.

Station: .. .. .. .. Stapleton Estate.

System of Replication: .. .. Three 3 × 3 Latin Squares.

Area of each plot: .. .. .. 1/20th acre weighed. Border rows discarded.

Variety: .. .. .. .. B.H. 10.12.

Treatments: .. .. .. 1. Distance between banks 4½ feet and between cross holes 2 feet.

2. Distance between banks 4½ feet and between cross holes 3 feet.

3. Distance between banks 4½ feet and between cross holes 4 feet.

Manurial treatment: .. .. All plots received a dressing of pen manure at the rate of about 25 tons per acre before planting, an early dressing of Sulphate of Ammonia at the rate of 2 cwts. per acre on the 23rd Feb. 1934, and a dressing at the rate of 3 cwts. of Sulphate of Ammonia per acre on the 30th May, 1934.

Planted: .. .. .. .. 16th January, 1934.

Reaped: .. .. .. .. 2-3 May, 1935.

Summary of Results.

| Treatment No. .. | 1 | 2 | 3 | |
|---|---|---|---|---|
| Planting distances .. | 4½ × 2 ft. | 4½ × 3 ft. | 4½ × 4 ft. | Mean. |
| Tons Cane per acre | 37.62 | 38.57 | 38.35 | 38.18 |
| Per Cent of Mean .. | 98.5 | 101.0 | 100.5 | 100.0 |

Each yield in the above table is the mean of 9 plots. By the Z test the results are not significant.

## TABLE XXI.

RAINFALL AT WEST FARM AND COLLEGE ESTATES.

| Stations. | West Farm | | College. | |
|---|---|---|---|---|
| Month. | Average rainfall 1919-34 inches | Rainfall crop period Nov. '33 to March 35. inches Excess deficit | Average rainfall 1919-34 inches | Rainfall crop period Feb '34 to May 35 inches Excess or deficit |
| | | 1933 | | |
| November .. .. | 6.12 | + 5.31 | — | — |
| December .. .. | 4.35 | + 1.13 | — | — |
| | | 1934 | | 1934 |
| January .. .. | 3.55 | + 1.59 | | |
| February .. .. | 2.22 | + 1.08 | 1.89 | — 1.24 |
| March .. .. | 2.81 | + 1.32 | 2.56 | + 1.14 |
| April .. .. .. | 2.47 | — 1.88 | 3.67 | — 3.62 |
| May .. .. .. | 2.71 | — 1.31 | 3.88 | — 2.78 |
| June .. .. .. | 3.41 | — 1.22 | 3.99 | — 2.34 |
| July .. .. .. | 4.46 | + 2.54 | 5.23 | + 1.30 |
| August .. .. | 5.11 | — 0.17 | 5.43 | + 0.60 |
| September .. .. | 6.31 | + 1.90 | 6.27 | — 1.17 |
| October .. .. | 4.82 | — 2.65 | 6.00 | — 4.10 |
| November .. .. | 6.12 | + 2.36 | 7.43 | + 2.12 |
| December .. .. | 4.35 | + 1.68 | 4.67 | + 0.83 |
| | | 1935 | | 1935 |
| January .. .. | 3.55 | — 0.62 | 3.49 | — 0.69 |
| February .. .. | 2.22 | — 0.04 | 1.89 | + 0.61 |
| March .. .. | 2.81 | — 1.43 | 2.56 | — 1.31 |
| April .. .. .. | — | — | 3.67 | — 2.22 |
| May .. .. .. | — | — | 3.88 | — 2.48 |
| Total | 67.39 | + 9.59 | 66.51 | — 15.35 |

## TABLE XXII.

### EXPERIMENT TO DETERMINE THE EFFECT ON YIELD OF PLANT CANES OF A MEGASS MULCH.

Station: .. .. .. .. West Farm Estate.

System of Replication: .. .. Two 5 x 5 Latin Squares.

Area of each plot: .. .. .. 1/20th acre weighed. Border rows discarded.

Variety: .. .. .. .. S.C.12.4.

Treatments: .. .. .. 1. No megass.
2. 2 inch layer of megass on every other bank.
3. 2 inch layer of megass on every bank.
4. 3 inch layer of megass on every other bank.
5. 3 inch layer of megass on every bank.

Other treatments: .. .. .. Unmulched banks were farmed and cultivated according to general practice.

Manurial treatments: .. .. All plots received a standard dressing of pen manure. Plots 1, 2, 3 and 4 each received 1 cwt. of Sulphate of Ammonia per acre on the 9th January and another cwt. on the 16th February, '34. On the 23rd May these plots received another 3 cwts. Sulphate of Ammonia per acre and plot 5 2 cwts.

Planted: .. .. .. .. 17—18 November, 1933.
Megass applied: .. .. .. 19—23 February, 1934.
Reaped: .. .. .. .. 18—21 March, 1935.

Summary of Results.

| Treatments | 1 No Megass | 2 2 in. layer megass every other bank. | 3 2 in. layer megass every bank. | 4 3 in. layer megass every other bank. | 5 3 in. layer megass every bank. | Mean. |
|---|---|---|---|---|---|---|
| Tons Cane per acre .. | 25.34 | 25.12 | 26.74 | 26.51 | 27.04 | 26.15 |
| Per Cent of Mean .. | 96.9 | 96.0 | 102.3 | 101.4 | 103.4 | 100.0 |
| Increment, tons cane . | .. | — 0.22 | 1.40 | 1.17 | 1.70 | .. |

Each yield in the above table is the mean of 10 plots The Standard Error of the difference between any two mean yields is 0.73 tons cane per acre and a difference of 1.51 tons per acre may be regarded as significant with a 20: 1 probability.

## TABLE XXIII.

### EXPERIMENT TO DETERMINE THE EFFECT ON YIELD OF PLANT CANES OF A MEGASS MULCH.

Station: .. .. .. .. College Estate.

System of Replication: .. .. Two 5 x 5 Latin Squares.

Area of each plot: .. .. .. 1/20th acre weighed. Border rows discarded.

Variety: .. .. .. .. S.C.12.4.

Treatments: .. .. .. 1. No Megass.
2. 2 inch layer of megass on every other bank.
3. 2 inch layer of megass on every bank.
4. 3 inch layer of megass on every other bank.
5. 3 inch layer of megass on every bank.

Other treatments: .. .. .. Unmulched banks were farmed and cultivated according to general practice.

Manurial treatments: .. .. All plots received a standard dressing of pen manure. Plots 1, 2, 3 and 4 each received 2 cwts. Sulphate of Ammonia per acre on the 18th April, 1934 and 3 cwts. Sulphate of Ammonia on the 19th June, 1934. Plot 5 only had 2cwts. Sulphate of Ammonia per acre applied on the 19th June.

Planted: .. .. .. .. 20th February, 1934.

Megass applied: .. .. .. 27 February to 5 March, 1934.

Reaped: .. .. .. .. 14-17 May, 1935.

SUMMARY RESULTS.

| Treatments | 1 No megass | 2 2 in. layer megass on every other bank | 3 2 in. layer megass on every bank | 4 3 in. layer megass on every other bank | 5 3 in. layer of megass on every bank. | Mean |
|---|---|---|---|---|---|---|
| Tons Cane per acre | 29.53 | 30.69 | 32.14 | 30.10 | 32.11 | 30.91 |
| Per Cent of Mean .. | 95.5 | 99.3 | 104.0 | 97.3 | 103.9 | 100.0 |
| Increment, tons cane | .. | 1.16 | 2.61 | 0.57 | 2.58 | |

Each yield in the above table is the mean of 10 plots. The Standard Error of the difference between any two mean yields is 0.86 tons cane per acre and a difference of 1.78 tons per acre may be regarded as significant with a 20:1 probability.

## TABLE XXIV.

### RAINFALL AT MOLINEUX AND NEEDSMUST ESTATES.

| Stations | Molineux | | Needsmust | |
|---|---|---|---|---|
| Month | Average rainfall 1919–34 inches | Rainfall crop period March '34 to May '35. inches Excess or deficit | Average rainfall 1914–34 inches | Rainfall crop period Dec. 33 to Feb. '35. inches Excess or deficit |
| December | .. | .. | 4.68 | 1933 + 3.42 |
| January | .. | 1934 .. | 3.28 | 1934 + 1.47 |
| February | .. | .. | 1.98 | + 0.57 |
| March | 3.44 | + 3.03 | 2.11 | + 2.39 |
| April | 5.37 | — 3.86 | 3.43 | — 2.83 |
| May | 4.34 | + 0.32 | 3.80 | — 1.95 |
| June | 4.56 | — 1.88 | 3.62 | — 0.77 |
| July | 5.34 | — 2.87 | 5.69 | + 2.21 |
| August | 5.90 | — 1.97 | 4.09 | + 0.81 |
| September | 7.89 | + 0.23 | 5.56 | + 0.60 |
| October | 6.80 | — 4.83 | 5.17 | — 2.47 |
| November | 7.92 | + 1.02 | 8.65 | + 1.95 |
| December | 4.79 | + 2.95 | 4.68 | — 1.02 |
| January | 3.60 | 1935 — 0.13 | 3.28 | 1935 — 0.38 |
| February | 2.51 | + 0.55 | 1.98 | — 0.53 |
| March | 3.44 | — 2.02 | .. | .. |
| April | 5.37 | — 3.96 | .. | .. |
| May | 4.34 | — 0.65 | .. | .. |
| Total | 75.61 | —14.07 | 62.00 | + 3.47 |

## TABLE XXV.

EXPERIMENT TO DETERMINE THE EFFECT OF CLOSE PLOUGHING ON THE YIELD OF PLANT CANES.

| | |
|---|---|
| Station: .. .. .. .. | Molineux Estate. |
| System of Replication: .. .. | Eight randomised blocks. Each treatment being repeated twice in each block. |
| Area of each plot: .. .. .. | Approximately 1/20th acre weighed. Border rows discarded. |
| Variety: .. .. .. .. | B.H.10.12. |
| Treatments: .. .. .. | 1. Close ploughing<br>2. Standard practice. |
| Manurial treatment: .. .. | 2 cwts of Sulphate of Ammonia and 170 lbs. of Muriate of Potash per acre applied on the 13th April and 2 cwts. of Sulphate of Ammonia per acre applied on the 30th June, 1934. |
| Planted: .. .. .. .. | 22-28 February, 1934. |
| Reaped: .. .. .. .. | 23-24 May, 1935. |

SUMMARY OF RESULTS.

| Treatments | 1 Close Ploughing | 2 Standard Practice | Mean |
|---|---|---|---|
| Tons Cane per acre .. .. .. | 36.80 | 36.75 | 36.78 |
| Per Cent of Mean .. .. .. | 100.1 | 99.9 | 100.0 |

Each yield in the above table is the mean of 16 plots.

## TABLE XXVI.

### EXPERIMENT TO DETERMINE THE EFFECT OF CLOSE PLOUGHING ON THE YIELD OF PLANT CANES.

Station: .. .. .. .. Needsmust Estate

System of Replication: .. .. Six randomised blocks. Each treatment being repeated twice in each block.

Area of each plot: .. .. .. Approximately 1-20th acre weighed. Border rows discarded.

Variety: .. .. .. .. B.H.10.12.

Treatment: .. .. .. 1. Close ploughing.

2. Standard practice.

Manurial treatment: .. .. 1 cwt. Sulphate of Ammonia per acre applied on the 1st February, 1934, and 2 cwts. Sulphate of Ammonia per acre applied on the 12th June, 1934.

Planted: .. .. .. .. 1-4 December, 1933.

Reaped: .. .. .. .. 4-6 March, 1935.

SUMMARY OF RESULTS.

| Treatments | 1 Close Ploughing. | 2 Standard Practice | Mean |
|---|---|---|---|
| Tons Cane per acre .. | 17.19 | 18.01 | 17.60 |
| Per Cent of Mean .. | 97.6 | 102.4 | 100.0 |

Each yield in the above table is the mean of 12 plots.

## TABLE XXVII.

### RAINFALL AT MANSION AND PARSONS ESTATES.

| Stations | Mansion | | Parsons | |
|---|---|---|---|---|
| Month | Average rainfall 1919-34 inches | Rainfall crop period Jan.'34 to May '35 inches Excess or deficit. | Average rainfall 1914-34 inches | Rainfall crop period Nov. '33 to Feb '35. inches Excess or deficit. |
| | | | | 1933 |
| November .. .. | — | — | 10.62 | + 6.64 |
| December .. .. | — | — | 4.64 | + 2.15 |
| | | 1934 | | 1934 |
| January .. .. | 3.46 | + 1.55 | 3.49 | + 2.27 |
| February .. .. | 1.93 | — 0.31 | 2.77 | — 0.50 |
| March .. .. | 2.84 | + 2.54 | 2.98 | + 3.27 |
| April .. .. .. | 4.15 | — 3.20 | 5.88 | — 5.13 |
| May .. .. .. | 4.31 | — 1.22 | 5.61 | — 2.20 |
| June .. .. .. | 4.16 | — 2.70 | 5.01 | — 3.66 |
| July .. .. .. | 5.30 | + 3.47 | 5.86 | + 6.08 |
| August .. .. | 5.94 | — 0.64 | 4.66 | + 1.07 |
| September .. .. | 7.24 | — 0.31 | 6.46 | + 4.56 |
| October .. .. | 6.50 | — 4.50 | 6.64 | — 2.36 |
| November .. .. | 7.94 | + 2.50 | 10.62 | + 1.74 |
| December .. .. | 4.40 | + 2.17 | 4.64 | — 0.65 |
| | | 1935 | | 1935 |
| January .. .. | 3.46 | + 0.39 | 3.49 | — 1.57 |
| February .. .. | 1.93 | + 0.85 | 2.77 | — 0.40 |
| March .. .. | 2.84 | — 1.84 | 2.98 | — 1.60 |
| April .. .. .. | 4.15 | — 2.71 | — | — |
| May .. .. .. | 4.31 | — 1.57 | — | — |
| Total | 74.86 | — 5.53 | 89.12 | + 9.71 |

## TABLE XXVIII.

### LIMING EXPERIMENT.

Station: .. .. .. .. Mansion Estate

System of Replication: .. .. Two 4 x 4 Latin Squares.

Area of each plot: .. .. .. 1/20th acre weighed. Border rows discarded.

Variety: .. .. .. .. B.H.10.12.

Treatments with slaked lime: .. 1. None.
2. ½ Lime Requirement.
3. Lime Requirement.
4. 1½ Lime Requirement.

Lime applied: .. .. .. 21-22 November, 1933.

Planted: .. .. .. .. 23 January, 1934.

Manurial treatment: .. .. A green dressing of pigeon pea was turned under at cultivation of the field. An application at the rate of 2 cwts. Sulphate of Ammonia and 1½ cwt. Muriate of Potash per acre was given on 19 March, 1934, and on 19 July, 1934, Sulphate of Ammonia was applied at the rate of 3 cwts per acre.

Reaped: .. .. .. .. 4-7 June, 1935.

SUMMARY OF RESULTS.

Effect of dressings of Slaked Lime on yield of Plant Canes.
L.R.=calculated lime requirement.

| Treatments | Control | ½ L.R. | L.R. | 1½ L.R. | Mean |
|---|---|---|---|---|---|
| Tons Cane per acre .. | 38.16 | 40.66 | 42.03 | 43.75 | 41.15 |
| Per Cent of Mean .. | 92.7 | 98.8 | 102.2 | 106.3 | 100.0 |
| Increment tons cane . | — | 2.50 | 3.87 | 5.59 | |

Each yield in the above table is the mean of 8 plots. The Standard Error of the difference between any two mean yields is 1.27 tons cane per acre and a difference of 2.77 tons per acre may be regarded as significant with a 20 : 1 probability.

## TABLE XXIX.

### LIMING EXPERIMENT.

Station: .. .. .. .. Parsons Estate.

System of Replication: .. .. Two 4 x 4 Latin Squares.

Area of each plot: .. .. .. 1/20th acre weighed. Border rows discarded.

Variety: .. .. .. .. B.H.10.12.

Treatments with slaked lime: .. 1. None.
2. ½ Lime Requirement.
3. Lime Requirement.
4. 1½ Lime Requirement.

Lime applied: .. .. .. 16-17 November, 1933.

Planted: .. .. .. .. 25 November, 1933.

Manurial treatment: .. .. A green dressing of pigeon pea was turned under at cultivation of the field. An application at the rate of 2 cwt. of Sulphate of Ammonia and 1½ cwt. of Muriate of Potash per acre was given on the 6th February, 1934 and on 6th June Sulphate of Ammonia was applied at the rate of 3 cwt per acre.

Reaped: .. .. .. .. 1-3 April, 1935.

SUMMARY OF RESULTS.

Effect of dressings of Slaked Lime on yield of Plant Canes.

L.R.=calculated lime requirement.

| Treatments | Control | ½ L.R. | L.R. | 1½ L.R. | Mean |
|---|---|---|---|---|---|
| Tons Cane per acre .. | 34.99 | 34.78 | 35.20 | 36.22 | 35.30 |
| Per Cent of Mean .. | 99.1 | 98.5 | 99.7 | 102.7 | 100.0 |
| Increment tons cane . | — | — 0.21 | 0.21 | 1.23 | — |

Each yield in the above table is the mean of 8 plots. By the Z test the results are not significant.

## TABLE XXX.

RAINFALL AT ESTRIDGE ESTATE.

| Month | Average rainfall 1919-34 inches. | Rainfall crop period Feb. '34 to May, '35. inches Excess or deficit. |
|---|---|---|
| | | 1934 |
| February .. .. | 1.98 | — 0.38 |
| March .. .. | 2.68 | + 0.95 |
| April .. .. | 4.24 | — 3.48 |
| May .. .. .. | 3.81 | — 1.99 |
| June .. .. .. | 3.61 | — 2.81 |
| July .. .. .. | 4.92 | + 3.21 |
| August .. .. | 5.30 | — 0.59 |
| September .. .. | 7.11 | — 1.53 |
| October .. .. | 5.61 | — 4.29 |
| November .. .. | 7.49 | — 0.07 |
| December .. .. | 4.25 | + 0.05 |
| | | 1935 |
| January .. .. | 3.01 | + 0.46 |
| February .. .. | 1.98 | + 0.20 |
| March .. .. | 2.68 | — 1.30 |
| April .. .. | 4.24 | — 2.14 |
| May .. .. .. | 3.81 | — 0.74 |
| Total | 66.72 | — 14.45 |

## TABLE XXXI.

### EXPERIMENT TO DETERMINE THE EFFECT OF APPLICATIONS OF MOLASSES ON THE YIELD OF PLANT CANES.

Station: .. .. .. .. Estridge Estate

System of Replication: .. .. Six randomised blocks.

Area of each plot: .. .. 1/20th acre weighed. Border rows discarded.

Variety: .. .. .. B.H.10.12.

Treatments per acre: .. .. 1. Control.

2. 1 quart Molasses per hole, one month before planting.

3. 2 quarts Molasses per hole, one month before planting.

4. 2 cwts. Sulphate of Ammonia and 1½ cwt. Muriate of Potash per acre six to eight weeks after planting and 2 cwts. Sulphate of Ammonia towards end of dry season, 1934.

5. 2 cwts. Sulphate of Ammonia per acre six to eight weeks after planting and 2 cwts. more towards end of dry season, 1934.

Planted: .. .. .. .. 20 February, 1934.

Reaped: .. .. .. .. 23-27 May, 1935.

SUMMARY OF RESULTS.

| Treatment No. | Molasses 24—25 Jan. 1934 | Muriate of Potash 24 April, 1934 | Sulphate of Ammonia 24 April 1934 | Sulphate of Ammonia 26 June 1934 | Yield tons cane per acre | Per cent of mean | Increment tons cane |
|---|---|---|---|---|---|---|---|
| 1 | nil | nil | nil | nil | 37.62 | 98.9 | — |
| 2 | 1 quart per hole | nil | nil | nil | 38.83 | 102.1 | 1.21 |
| 3 | 2 quarts per hole | nil | nil | nil | 37.54 | 98.7 | — 0.08 |
| 4 | nil | 1½ cwts | 2 cwts | 2 cwts | 38.16 | 100.4 | 0.54 |
| 5 | nil | nil | 2 cwts | 2 cwts | 37.98 | 99.9 | 0.36 |
| Mean | | | | | 38.03 | 100.0 | |

Each yield in the above table is the mean of 6 plots, except treatment No. 4 the yield of which is the mean of 5 plots only.

## TABLE XXXII.

RAINFALL AT WEST FARM AND DOUGLAS ESTATES.

| Stations | West Farm | | Douglas | |
|---|---|---|---|---|
| Month | Average rainfall 1919-34 inches | Rainfall crop period March '34 to April 35. inches Excess or deficit. | Average rainfall 1923-34 inches | Rainfall crop period March '34 to April 35. inches Excess or deficit. |
| | | 1934 | | 1934 |
| March .. .. | 2.81 | + 1.32 | 2.83 | + 0.78 |
| April .. .. | 2.47 | — 1.88 | 2.39 | — 2.14 |
| May .. .. .. | 2.71 | — 1.31 | 3.23 | — 1.95 |
| June .. .. .. | 3.41 | — 1.22 | 4.05 | — 1.82 |
| July .. .. .. | 4.46 | + 2.54 | 4.81 | + 1.56 |
| August .. .. | 5.11 | — 0.17 | 5.94 | — 0.42 |
| September .. .. | 6.31 | + 1.90 | 7.25 | — 0.90 |
| October .. .. | 4.82 | — 2.65 | 5.30 | — 2.00 |
| November .. .. | 6.12 | + 2.36 | 7.46 | + 3.94 |
| December .. .. | 4.35 | + 1.68 | 4.47 | + 1.43 |
| | | 1935 | | 1935 |
| January .. .. | 3.55 | — 0.62 | 3.11 | — 0.41 |
| February .. .. | 2.22 | — 0.04 | 1.47 | + 0.83 |
| March .. .. | 2.81 | — 1.43 | 2.83 | — 1.83 |
| April .. .. | 2.47 | — 1.44 | 2.39 | — 1.29 |
| Total | 53.62 | — 0.96 | 57.53 | — 4.22 |

## TABLE XXXIII.

### EXPERIMENT TO DETERMINE THE EFFECT ON THE YIELD OF FIRST RATOON CANES OF MEGASS APPLIED AS A MULCH ON ALTERNATE BANKS.

Station: .. .. .. .. West Farm Estate.

System of Replication: .. .. Three 4 x 4 Latin Squares.

Area of each plot: .. .. .. 1/20th acre weighed. Border rows discarded.

Variety: .. .. .. .. B.H.10.12.

Treatments: .. .. .. 1. Trash hauled on alternate rows and bare rows cultivated as in standard local practice.

2. As in 1 with the additional treatment of 4 cwts of Sulphate of Ammonia per acre in two dressings of 2 cwt each.

3. Trash hauled on alternate rows, bare row cultivated and then covered with a 3 inch layer of megass.

4. As in 3 with the additional treatment of 4 cwts of Sulphate of Ammonia per acre in two dressings of 2 cwts each.

Cut as plant canes: .. .. .. 10—15 March, 1934.

Reaped: .. .. .. .. 15—23 April, 1935.

SUMMARY OF RESULTS.

| Treatment No. | Megass | Sulphate of Ammonia | | Yield | Per cent of mean | Increment |
|---|---|---|---|---|---|---|
| | 2—6 April 1934 | 28 March 1934 | 13 June 1934 | tons cane per acre | | tons cane |
| 1. | nil | nil | nil | 16.93 | 74.6 | — |
| 2. | nil | 2 cwts | 2 cwts | 28.93 | 127.4 | 12.00 |
| 3. | 3 in. layer on alternate banks | nil | nil | 15.66 | 69.0 | — 1.27 |
| 4. | as in 3 | 2 cwts | 2 cwts | 29.27 | 129.0 | 12.34 |
| Mean | | | | 22.70 | 100.0 | |

Each yield in the above table is the mean of 12 plots. The Standard Error of the difference between any two mean yields is 0.92 tons canes per acre and a difference of 1.93 tons per acre may be regarded as significant with a 20 : 1 probability.

## TABLE XXXIV.

### EXPERIMENT TO DETERMINE THE EFFECT ON THE YIELD OF FIRST RATOON CANES OF MEGASS APPLIED AS A MULCH ON ALTERNATE BANKS.

Station: .. .. .. .. Douglas Estate.

System of Replication: .. .. Three 4 x 4 Latin Squares.

Area of each plot: .. .. .. 1/20th acre weighed. Border rows discarded.

Variety: .. .. .. .. S.C.12.4.

Treatments: .. .. .. 1. Trash hauled on alternate rows and bare rows cultivated as in standard local practice.

2. As in 1 with the additional treatment of 4 cwts of Sulphate of Ammonia per acre in two dressings of 2 cwts each.

3. Trash hauled on alternate rows, bare rows cultivated and then covered with a 3 inch layer of megass.

4. As in 3 with the additional treatment of 4 cwts of Sulphate of Ammonia per acre in two dressings of two cwts each.

Cut as plant canes: .. .. .. March, 1934.

Megass applied: .. .. .. 2—5 April, 1934.

Reaped: .. .. .. .. 20—22 May, 1935.

SUMMARY OF RESULTS.

| Treatment No. | Megass 2—5 April 1934 | Sulphate of Ammonia | | Yield tons cane per acre | per cent of mean | Increment tons cane |
|---|---|---|---|---|---|---|
| | | 30 March 1934 | 14 June 1934 | | | |
| 1. | nil | nil | nil | 15.14 | 79.2 | — |
| 2. | nil | 2 cwts | 2 cwts | 21.19 | 110.8 | 6.05 |
| 3. | 3 in. layer on alternate banks | nil | nil | 16.05 | 83.9 | 0.91 |
| | | | | | | 8.99 |
| 4. | As in 3 | 2 cwts | 2 cwts | 24.13 | 126.1 | |
| Mean | | | | 19.13 | 100.0 | |

Each yield in the above table is the mean of 12 plots. The Standard Error of the difference between any two mean yields is 0.96 tons cane per acre and a difference of 2.01 tons per acre may be regarded as significant with a 20 : 1 probability.

## THE COTTON INDUSTRY.

Estates' returns show that only 253 acres of cotton were planted in St. Kitts in 1934. Although the acreage is larger than that of last season the low price and indifferent demand for sea island cotton did not encourage growers to increase the acreage under this crop to any great extent. The production was 59,129 lbs. of lint of which 13.6 per cent was stained cotton. According to the Customs returns the export of cotton from the Presidency for the year was 166,910 lbs. valued at £7,324.

Of the 253 acres 162 acres were planted with seed of the St. Kitts type and 91 acres with seed of the shorter Montserrat type. At the present time it appears that there is a greater demand for the shorter moderately fine Montserrat type than for the finer staple which it has been customary to produce in St. Kitts. The two types were cultivated on different sides of the island and satisfactory arrangements were made at the ginneries to prevent mixing.

The yield of the St. Kitts type was 242 lb. lint per acre and the Montserrat type 218 lb. per acre.

It is probable that about 300 acres of cotton will be planted in 1935.

The Honourables A. M. Reid and W. Walwyn represented the St. Kitts Cotton Growers' Association at the annual general meeting of the West Indian Sea Island Cotton Association which was held in Montserrat in November. It appears that the efforts of this body to assist the sea island cotton industry of these islands were attended with some success during the year.

## COTTON SELECTION.

Cotton selection was conducted along the usual lines. Twenty-four progeny rows of thirty plants each were grown.

Dr. Harland, Cotton Adviser to the Commissioner of Agriculture, visited the island from the 17th—22nd August and inspected the cotton selections at the Experiment Station and several cotton fields. He submitted a report on his visit and his suggestions regarding the selection work are being adopted.

## DETAILS OF ADMINISTRATION.

### EXPENDITURE

| | £ | s. | d. |
|---|---|---|---|
| Personal Emoluments .. .. .. .. | 931 | 13 | 11 |
| Travelling and Subsistence Allowances .. .. | 118 | 7 | 0 |
| Experiment Stations .. .. .. .. | 143 | 6 | 5 |
| Sugar Cane, Cotton and other Experiments .. .. | 386 | 16 | 2 |
| Apparatus, Chemicals and Books .. .. .. | 33 | 1 | 5 |
| Contingencies .. .. .. .. | 13 | 6 | 2 |
| Destruction of wild cotton and cotton pests .. .. | 23 | 0 | 5 |
| Demonstration Plots (Nevis and Anguilla) .. .. | 78 | 16 | 10 |
| Purchase of Vegetable Seeds .. .. .. | 40 | 0 | 0 |
| Total | £1,768 | 8 | 4 |

### REVENUE.

| | | | |
|---|---|---|---|
| Experiment Stations .. .. .. .. | £159 | 1 | 5½ |

## STAFF CHANGES.

Mr. P. Carter, Assistant Clerk, was transferred to Anguilla in March and his place was taken by Mr. G. Brand. Mr. Brand was transferred to the Post Office at the end of May and Mr. L. C. W. Greaves was appointed to act as Assistant Clerk. Mr. Greaves resigned his acting appointment at the end of December to take up employment in Venezuela.

## OFFICIAL VISITS.

Mr. G. A. Jones, Dip. Agric. (Bangor), Commissioner of Agriculture; Mr. C. C. Skeete, B.A., Assistant Commissioner of Agriculture; Mr. P. E. Turner, M.Sc., F.I.C., Adviser in Sugar-Cane Experiments to the Commissioner of Agriculture; Dr. S. C. Harland, Cotton Adviser to the Commissioner of Agriculture; Dr. J. G. Myers, Biological Control Research Officer, and Mr. H. E. Box, F.R.E.S., Entomologist, visited the Department during the year.

## AGRICULTURAL EDUCATION.

Lectures were given to the senior class of the Grammar School twice a week at the Experiment Station. The lectures covered the work required for the Cambridge School Certificate examination in Plant Biology and Soil Science of the general science paper. The boys were also given practical instruction in the methods of vegetative propagation of plants, spraying, etc.

## EXPORTS OF SUGAR.

The following table gives the Exports of Sugar from the Presidency for the twenty-five years 1910-1934.

| Year. | Tons. | Year. | Tons. |
|---|---|---|---|
| 1910 ... ... ... | 12,510 | 1923 ... ... ... | 10,717 |
| 1911 ... ... ... | 11,139 | 1924 ... ... ... | 9,699 |
| 1912 ... ... ... | 10,554 | 1925 ... ... ... | 15,043 |
| 1913 ... ... ... | 11,312 | 1926 ... ... ... | 15,651 |
| 1914 ... ... ... | 9,946 | 1927 ... ... ... | 17,363 |
| 1915 ... ... ... | 8,311 | 1928 ... ... ... | 18,610 |
| 1916 ... ... ... | 16,106 | 1929 ... ... ... | 12,736 |
| 1917 ... ... ... | 15,048 | 1930 ... ... ... | 17,637 |
| 1918 ... ... ... | 9,105 | 1931 ... ... — | 10,579 |
| 1919 ... ... ... | 11,015 | 1932 ... ... ... | 19,327 |
| 1920 ... ... ... | 12,483 | 1933 ... ... ... | 22,588 |
| 1921 ... ... ... | 10,592 | 1934 ... ... ... | 27,415 |
| 1922 ... ... ... | 9,648 | | |

## EXPORTS OF COTTON.

The following table gives the Exports of Cotton from the Presidency for the twenty-five years ended September 30th, 1934.

| Year. | St. Kitts lbs. | Nevis. lbs. | Anguilla. lbs. | Total. lbs. |
|---|---|---|---|---|
| 1910 ... ... ... | 231,150 | 129,973 | 43,400 | 404,523 |
| 1911 ... ... ... | 329,322 | 344,395 | 148,595 | 822,312 |
| 1912 ... ... ... | 332,168 | 165,329 | 97,142 | 594,639 |
| 1913 ... ... ... | 374,594 | 166,477 | 112,138 | 653,209 |
| 1914 ... ... ... | 372,633 | 268,542 | 94,372 | 735,547 |
| 1915 ... ... ... | 397,567 | 305,154 | 33,750 | 736,401 |
| 1916 ... ... ... | 131,859 | 99,173 | 49,620 | 280,652 |
| 1917 ... ... ... | 106,265 | 196,915 | 49,399 | 352,579 |
| 1918 ... ... ... | 2,457 | 187,748 | 652 | 190,857 |
| 1919 ... ... ... | 422,681 | 307,212 | 47,869 | 797,762 |
| 1920 ... ... ... | 288,720 | 292,627 | 61,543 | 642,890 |
| 1921 ... ... ... | 23,970 | 422,120 | nil | 446,090 |
| 1922 ... ... ... | 228,612 | 225,851 | 50,120 | 504,583 |
| 1923 ... ... ... | 29,256 | 510,919 | nil | 540,175 |
| 1924 ... ... ... | 81,590 | 234,957 | 23,342 | 344,907 |
| 1925 ... ... ... | 186,607 | 81,844 | nil | 267,451 |
| 1926 ... ... ... | 297,023 | 126,014 | 4,337 | 427,374 |
| 1927 ... ... ... | 220,095 | 224,588 | nil | 444,683 |
| 1928 ... ... ... | 161,360 | 113,492 | 1,506 | 276,358 |
| 1929 ... ... ... | 250,357 | 436,892 | 23,463 | 710,712 |
| 1930 ... ... ... | 365,811 | 286,791 | 26,505 | 679,107 |
| 1931 ... ... ... | 235,668 | 161,922 | 31,310 | 428,900 |
| 1932 ... ... ... | 78,727 | 16,244 | 13,150 | 108,121 |
| 1933 ... ... ... | 116,924 | 8,563 | 23,596 | 149,083 |
| 1934 ... ... ... | 23,387 | 50,197 | 34,947 | 108,531 |

## RETURN OF AGRICULTURAL PRODUCE EXPORTED FROM THE PRESIDENCY OF ST. KITTS-NEVIS FOR THE YEAR ENDED 31ST DECEMBER, 1934.

| Article. | Quantity. | Value. |
|---|---|---|
| | | £ |
| Sugar, crystals ... ... | 27,415 tons | 252,986 |
| Sugar, muscovado ... ... | 10 „ | 106 |
| Vacuum Pan Molasses ... | 688,896 gallons | 1,353 |
| Cane Syrup ... ... ... | 20,547 „ | 765 |
| Cotton, Sea Island ... ... | 166,910 lbs. | 7,324 |
| Coconuts ... ... ... | 105,646 | 228 |
| Copra — ... ... ... | 58,800 lbs. | 223 |
| Salt ... ... ... ... | 1,302 tons | 2,056 |
| Vegetables, Tomatoes ... | 14,000 lbs. | 105 |
| Vegetables, other ... ... | | 388 |
| Sweet Potatoes ... ... | 6,240 lbs. | 26 |
| Tamarinds ... ... ... | 5,500 lbs. | 23 |
| Ginger ... ... ... | 408 lbs. | 11 |
| Hides and Skins ... ... | | 140 |
| Horses ... ... ... ... | 22 | 139 |
| Mules ... ... ... ... | 17 | 90 |
| Asses ... ... ... ... | 65 | 64 |
| Cattle ... ... ... ... | 50 | 176 |
| Sheep ... ... ... ... | 445 | 230 |
| Goats ... ... ... ... | 43 | 21 |
| Swine ... ... ... ... | 120 | 76 |

## PLANT LEGISLATION.

The legislation recorded in last year's report remains unchanged.

## METEOROLOGY.

The following are summaries of the observations recorded at the Experiment Station, La Guerite, during the year under review.

*Barometric Pressure.* During 1934 the mean pressure, corrected for temperature and gravity and reduced to sea level, at 9 a.m. was 30.018 and at 3 p.m. 29.950; the highest recorded being 30.169 ins. on February 27th at 9 a.m. and the lowest 29.722 ins. on November 26th at 3 p.m.

*Temperature.* The mean maximum temperature for the year was 83.2°F. and the mean minimum 73.3°F. The maximum extreme for the year 88°F was registered on the 12th and 14th October and the minimum extreme 68°F on January 1st, 4th, 16th and 29th; February 7th and March 3rd, 10th, 14th, 22nd, 27th and 28th. The mean average temperature was 78.3°F and the mean monthly range 14.9°F.

*Humidity.* The mean relative humidity was at 9 a.m. 72.4 per cent and at 3 p.m. 69.2 per cent.

*Rainfall.* The total rainfall measured at the Experiment Station was 52.20 inches. This fell on 204 days, the greatest fall being 3.12 inches on July 21st. The total average rainfall for the year for 38 stations was 55.34 inches, the average rainfall of the island for the period 1914 to 1934 being 55.47 inches. The average rainfall for 1934 was 8.63 inches below the average for 1933 and about equal to the average for the past 21 years.

Latitude 17° 20′ N. **METEOROLOGICAL REPORT FOR 1934.** Heights above M. S. L. } Barometer 157 feet. Rain Gauge 152 „

Longitude 62° 45′ W. AGRICULTURAL DEPARTMENT, ST. KITTS.

| Months | Barometric Pressure reduced to Sea Level, 32° Fahrenheit, and corrected for gravity. Inches. 9 a.m. | 3 p.m. | Mean. | Highest. | Lowest | Temperatures °F. Maximum Means. | Minimum Means. | Maximum Extreme | Minimum Extreme. | Mean for Month | Range for Month. | Dew Point 9 a.m. | Dew Point 3 p.m. | Vapour Pressure Ins. of Mercury. 9 a.m. | 3 p.m. | Mean. | Relative Humidity per cent. 9 a.m. | 3 p.m | Mean. | Inches Rainfall. | No. of days on which rain fell. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| January .. | 30·051 | 29·970 | 30·011 | 30·112 | 29·889 | 79·7 | 70 9 | 81 | 68 | 75·3 | 13 | 67.8 | 67·0 | 686 | 674 | 680 | 74·0 | 70·0 | 72 0 | 5·53 | 21 |
| February .. | 30·076 | 30·001 | 3 )·039 | 30·169 | 29·918 | 80·8 | 70·3 | 82 | 68 | 75·6 | 14 | 66·4 | 66 4 | ·638 | ·635 | ·637 | 68·5 | 63 0 | 65·8 | 1·21 | 13 |
| March ... .. | 30 031 | 29·969 | 30·000 | 30 114 | 29·899 | 80·5 | 70·2 | 83 | 68 | 75 4 | 15 | 66 2 | 68·0 | ·653 | ·680 | ·677 | 70·0 | 68·5 | 69·3 | 4 93 | 25 |
| April ... .. | 30·014 | 29·962 | 29·988 | 30 101 | 29·901 | 82 6 | 71 8 | 84 | 69 | 77·2 | 15 | 68·2 | 66·8 | 695 | ·662 | ·679 | 66·5 | 64·0 | 65·3 | 0·38 | 7 |
| May ... .. | 30·034 | 29·971 | 30·003 | 30·143 | 29·849 | 83·8 | 73.6 | 86 | 71 | 78·7 | 15 | 70·0 | 69·4 | ·736 | ·713 | ·725 | 69·5 | 66·7 | 68·1 | 1·68 | 10 |
| June ... .... | 30·034 | 29 982 | 30·008 | 30·095 | 29 913 | 84·8 | 75·0 | 87 | 72 | 79 9 | 15 | 72·4 | 70 9 | ·792 | ·768 | ·780 | 72 0 | 67·5 | 69·8 | 2·32 | 13 |
| July ... ... | 30·035 | 29·990 | 30·013 | 30·101 | 29·935 | 84·5 | 75·8 | 86 | 70 | 80·2 | 16 | 73·0 | 73·4 | ·822 | ·822 | ·822 | 74·5 | 72·5 | 73·5 | 9·35 | 20 |
| August ... .. | 30·020 | 29·970 | 29·995 | 30·085 | 29 888 | 85·3 | 75·6 | 87 | 74 | 80·5 | 13 | 74·0 | 73 8 | ·848 | ·786 | ·817 | 74 5 | 73·0 | 73 8 | 3·87 | 24 |
| September ... | 29 976 | 29 896 | 29 936 | 30·038 | 29·810 | 85·3 | 75·2 | 87 | 71 | 80·3 | 16 | 73·4 | 73·6 | ·837 | ·837 | 837 | 76·0 | 71·0 | 73·5 | 6·16 | 18 |
| October ... ... | 29·971 | 29·888 | 29·930 | 30·068 | 29·797 | 86·5 | 75·4 | 88 | 73 | 81·0 | 15 | 72 8 | 72·0 | ·786 | ·798 | ·792 | 70·0 | 68·0 | 69·0 | 1 78 | 11 |
| November ... | 29·930 | 29·844 | 29·887 | 30·008 | 29·722 | 83·3 | 73 2 | 86 | 70 | 78 3 | 16 | 72·2 | 71·6 | ·792 | ·786 | ·789 | 77·0 | 74·0 | 75·5 | 8·74 | 21 |
| December . | 30·041 | 29.959 | 30·000 | 30·099 | 29 910 | 81·6 | 72 2 | 85 | 69 | 76·9 | 16 | 69·8 | 69·2 | ·727 | ·724 | ·726 | 76·0 | 72·5 | 74·3 | 6 25 | 21 |
| Means .. | 30·018 | 29 950 | 29·984 | | | 83·2 | 73·3 | 85·2 | 70·3 | 78 3 | 14·9 | 70 5 | 70·2 | ·751 | ·740 | ·746 | 72·4 | 69·2 | 70 8 | 52·20 | 204 |

## RAINFALL RETURN FOR ST. KITTS FOR YEAR 1934.

| Station. | January. | February. | March | April. | May. | June. | July. | August. | September. | October. | November. | December. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Willets ... ... | 5·05 | 1·99 | 8·21 | 0·81 | 3·04 | 2·43 | 12·08 | 5·28 | 12·74 | 8·05 | 10·03 | 5·93 | 75·64 |
| Belle Vue ... | 12·27 | 3·09 | 7·87 | 1·75 | 3·73 | 2·57 | 9·71 | 4·62 | 8·93 | 3·34 | 10·20 | 6·27 | 74·35 |
| Belmont ... ... | 4·60 | 2·48 | 8·08 | 1·34 | 2·20 | 2·31 | 10·67 | 9·32 | 9·20 | 7·28 | 8·62 | 7·04 | 73·14 |
| Parsons ... ... | 5·76 | 2·27 | 6·25 | 0·75 | 3·41 | 1·35 | 11·94 | 5·73 | 11·02 | 4·28 | 12·36 | 3·99 | 69·11 |
| Wingfield ... ... | 5·61 | 2·45 | 4·36 | 2·08 | 4.39 | 3·54 | 7·09 | 9·29 | 8·01 | 2·15 | 10·62 | 9·43 | 69·02 |
| Shadwell ... ... | 8·20 | 1·48 | 5·70 | 0·63 | 1·83 | 2·11 | 9·05 | 5·48 | 8·01 | 2·79 | 12·42 | 8·05 | 65·75 |
| Caines ... ... | 6·35 | 2·59 | 4·38 | 0·96 | 2·35 | 1·43 | 10·47 | 5·13 | 11·11 | 3·55 | 10.03 | 6·22 | 64·57 |
| Fountain ... ... | 8·60 | 1·66 | 5·73 | 0·77 | 1.98 | 4·25 | 6·33 | 7·57 | 5·98 | 2·27 | 11·96 | 7·16 | 64·26 |
| Molineux ... ... | 6·32 | 2·02 | 6·47 | 1·51 | 4·66 | 2·68 | 8·21 | 3·93 | 8·12 | 1·97 | 8·94 | 7·74 | 62·57 |
| Sir Gillies ... .. | 1·85 | 2·30 | 1·80 | 2·10 | 0·50 | 6·90 | 5·75 | 9·45 | 7·35 | 3·35 | 11·75 | 8·46 | 61·50 |
| Brothersons ... | 3·06 | 1·50 | 6·36 | 1·06 | 1·89 | 3·01 | 8·86 | 10·59 | 5·50 | 4·97 | 8·52 | 5·62 | 60·94 |
| Stapleton . . .. | 9·62 | 1·91 | 5·07 | 0·47 | 1·44 | 2·77 | 6·03 | 7·10 | 6·62 | 2·96 | 11·23 | 5·52 | 60·74 |
| Lodge ... ... | 6·37 | 1·14 | 6·93 | 0·82 | 4·16 | 1·56 | 8·59 | 4·57 | 6·54 | 2·35 | 8·84 | 7·07 | 58·94 |
| Mansion ... ... | 5·01 | 1·62 | 5·38 | 0·95 | 3·09 | 1·46 | 8·77 | 5·30 | 6·93 | 2·00 | 10·44 | 6·57 | 57·52 |
| Olivees ... ... | 6·14 | 0·86 | 4·06 | 0·93 | 1·17 | 1·99 | 9·58 | 5·28 | 6·83 | 2·11 | 10·09 | 6·78 | 56·12 |
| Cranstouns ... | 2·78 | 1·57 | 5·11 | 1·20 | 2·60 | 3·82 | 8·10 | 8·65 | 4·75 | 3·90 | 7·73 | 5·10 | 55·31 |
| Farm ... ... | 2·92 | 1·43 | 4·13 | 0·82 | 2·70 | 3·70 | 5·65 | 8·80 | 6·05 | 1·80 | 10·80 | 6·40 | 55·20 |
| Needsmust ... | 4·75 | 2·55 | 4·50 | 0·60 | 1·85 | 2·85 | 7·90 | 4·90 | 6·16 | 2·70 | 10·60 | 5·70 | 55·06 |
| Bourkes ... ... | 3·72 | 1·11 | 4·55 | 1·25 | 3·34 | 4·32 | 6.73 | 6·39 | 6·17 | 2·51 | 8·26 | 6·52 | 54·87 |
| | | | | | | | | | | | 7·20 | 5·02 | 54·52 |

## AVERAGE RAINFALL 1914—1934.

| | | | | |
|---|---|---|---|---|
| In 1914 the average rainfall on | 31 | Stations was | 52.92 | in. |
| 1915 „ | 32 | „ | 75.59 | „ |
| 1916 „ | 35 | „ | 69.51 | „ |
| 1917 „ | 33 | „ | 43.53 | „ |
| 1918 „ | 30 | „ | 52.44 | „ |
| 1919 „ | 29 | „ | 62.84 | „ |
| 1920 „ | 28 | „ | 37.13 | „ |
| 1921 „ | 29 | „ | 47.09 | „ |
| 1922 „ | 33 | „ | 44.84 | „ |
| 1923 „ | 30 | „ | 34.58 | „ |
| 1924 „ | 28 | „ | 68.13 | „ |
| 1925 „ | 32 | „ | 43.54 | „ |
| 1926 „ | 27 | „ | 62.57 | „ |
| 1927 „ | 29 | „ | 64.36 | „ |
| 1928 „ | 29 | „ | 53.25 | „ |
| 1929 „ | 28 | „ | 52.55 | „ |
| 1930 „ | 31 | „ | 45.98 | „ |
| 1931 „ | 31 | „ | 57.60 | „ |
| 1932 „ | 33 | „ | 77.27 | „ |
| 1933 „ | 36 | „ | 63.97 | „ |
| 1934 „ | 38 | „ | 55.34 | „ |

The average rainfall for 21 years is 55.47 inches, so that the rainfall for the year 1934 is 0.13 inches below the average.

## AVERAGE MONTHLY RAINFALL.

| | 1934 Inches | 1914—1934 Inches |
|---|---|---|
| January | 5.37 | 3.28 |
| February | 1.53 | 1.99 |
| March | 4.61 | 2.54 |
| April | 0.91 | 3.88 |
| May | 2.23 | 4.07 |
| June | 2.37 | 4.13 |
| July | 7.74 | 5.23 |
| August | 5.73 | 5.39 |
| September | 6.64 | 6.40 |
| October | 2.76 | 6.23 |
| November | 9.28 | 7.32 |
| December | 6.17 | 4.66 |

Latitude 17°

Longitude 6[illegible]

| Months | |
|---|---|
| January | |
| February | |
| March | ... |
| April | ... |
| May | ... |
| June | ... |
| July | ... |
| August | ... |
| September | |
| October | ... |
| November | |
| December | |
| Means | |

# Report of the Agricultural Instructor, Nevis

**For the year 1934.**

## DISTRIBUTION OF PLANTS, AND SEEDS.

The following plants, seeds, &c., were distributed from the Station during the year:—

| | |
|---|---|
| Ornamental plants .. .. .. | 95 |
| Grafted mangoes .. .. .. | 7 |
| Budded Oranges .. .. .. | 4 |
| Papaw .. .. .. .. | 4 |
| Guava .. .. .. .. | 1 |
| | 111 |

## INTRODUCTION OF PLANTS AND SEEDS.

The following plants, seeds, &c., were received at the Station during the year:—From Prof. Juan Balme of Mexico: *Ipomea arborea, Prunus capuli, Anona cherimolia, Erythrina corallodendron, Tabehuia Guayacan, Diospyros ebenester, Pachira insignis, Swietenia humiles, Cupressus Benthani, Tecoma stans, Sapindus saponaria, Oreodoxa regia, Washingtonia filifera, Gliricidia sepium, Enterolobium cyclocarpum.*

From the Agricultural Department, St. Kitts: 100 plants of the cane variety B.2935.

## PLOT EXPERIMENTS.

Experiments with economic and food crops were carried out at the experiment station during the year, and seeds and cuttings of the varieties giving best results were distributed. The following is a list of the seeds and cuttings distributed:—

| | |
|---|---|
| Sweet Potato cuttings .. .. | 3,130 |
| Cassava „ „ .. .. | 410 |
| Yams, lb. .. .. .. | 344 |
| Tannia Heads lb .. .. .. | 39 |
| Seed Corn lb .. .. .. | 13 |
| Peas and Beans lb. .. .. | 3 |
| Peanuts lb .. .. .. | 5 |
| Selected Cotton Seed lb .. .. | 18,469 |

## VEGETABLE NURSERY.

As in the past vegetable seedlings were raised in a nursery plot at the station and sold to growers at cost.

The following is a list of the seedlings distributed:—

| | |
|---|---|
| Onion seedlings .. .. | 327,900 |
| Tomato seedlings (Marglobe) .. | 155,030 |
| Cabbage „ .. .. | 4,240 |

## LAND SETTLEMENT NURSERY.

In connection with the Land Settlement Scheme in Nevis, cane nurseries are maintained for the purpose of raising cuttings of suitable varieties for distribution to the allotment holders. A nursery of 2 acres is grown at the Experiment Station, and one of 4 acres on the Hamilton settlement. The varieties raised in the nursery are B.H.10(12), S/C. 12/4, B.726 and B.2935.

Distribution of plants was started in November and the total quantity of plants distributed was 172,805 cuttings.

## COTTON SELECTION.

Work on cotton selection was continued on the same lines as in the past.

The following table shows some of the characteristics of the best plants in the progeny rows:—

| Plant No. | No. of Bolls | Weight of Seed cotton ozs. | Mean Max. Length m.m. | Max Length m.m. |
|---|---|---|---|---|
| 14/2 | 145 | 6.0 | 49.7 | 51 |
| 21/2 | 109 | 5.0 | 49.9 | 51 |
| 22/1 | 122 | 5.5 | 51.6 | 53 |
| 27/1 | 156 | 6.5 | 49.7 | 51 |
| 28/2 | 97 | 4.0 | 50.1 | 54 |
| 30/1 | 183 | 9.0 | 49.8 | 51 |

## WORK IN CONNECTION WITH INSECT PESTS AND FUNGUS DISEASES AND THEIR CONTROL.

*Mosaic Disease.* No trace of this disease was observed during the year.

*Gumming Disease.* The situation with regard to gumming disease is not yet satisfactory; although there is some improvement.

*Moth Borer.* This pest continues to do serious damage to the cane crop each year. The Cuban fly (Lixophaga diatraeae) was introduced into the island during the months of July and August. A check was made during the

latter part of the year under report, and while it was found that the borer was not so plentiful in the immediate neighbourhood of where the flies were liberated yet no trace of the fly was found.

..*Root Fungus.* This disease was observed more generally this year, and it appears to be on the increase.

## COTTON.

The cotton leaf worm (Alabama) did a great deal of damage to the crop, and generally very little effort was made to control the pest.

*Pink boll Worm.* This pest was unusually severe this season. The attack started early in the season, and reached its peak at about January, and passed off as the dry weather approached. In December and January in some fields as high as 30% of the bolls the plants were then carrying was infected.

*Cotton Stainer.* The cotton stainer was unusually plentiful this season. For the past two years, this pest has been steadily increasing.

The cleaning up of the cotton fields has not been very satisfactory, especially those in which the cotton was destroyed early.

The fumigation of cotton seed at the ginneries was carried out in accordance with Regulations.

## VEGETABLES.

*Green Bug.* This pest was very plentiful this season, and did a great deal of damage to the late tomato crop.

*Scarabee* (*Cryptorhynchus batatae*). This pest is decreasing and it was observed only in a few places.

Slugs continue to be troublesome, but they were not as plentiful as they were last year.

## INSECTICIDES.

A supply of Paris Green and lime was in stock at the Experiment Station, but although the attack of the cotton leaf worm was severe, very little poisoning was done. The total amount supplied was 7 lb. of Paris Green.

*Disinfection and Fumigation of Plants and Seeds.* In accordance with the provisions of the Plant Protection Ordinance 6 consignments of seeds were received at the Station for fumigation.

## PROGRESS OF CHIEF INDUSTRIES.

### COTTON.

The 1933/34 cotton crop was all reaped by the end of May, 1934, and the total production was 47,677 lb. of lint from about 600 acres; being at the rate of about 80 lb. of lint per acre.

The greater part of the 1934/35 crop was planted during the month of November as October was too dry. The total acreage planted was about 1,000 acres. The seed germinated fairly well, and the crop on the whole was looking very promising. Towards the end of December the crop was severely attacked by the leaf worm, and in some places serious damage was done as very little effort was made to control the pest.

There was also a very heavy infestation of the pink boll worm and an unusually severe attack of the cotton stainer; consequently only a very poor crop is expected.

## SUGAR CANE.

There is some improvement in the cane industry of the island. The acreage under cultivation was about 1,000 acres. The crop was all reaped by the end of June 1934, but the yields were very poor due partly to poor methods of cultivation and late planting. Demonstration plots are grown in different parts of the island with the object of bringing about better cultivation and earlier planting, and the plots are cut to supply plants at the right planting time.

The total quantity of canes shipped to the Basseterre Factory through its local purchasing agent was as follows:—

| | |
|---|---|
| From Charlestown .. .. | 2,429 tons |
| „ New Castle .. .. | 1,887 „ |
| | 4,316 tons |

Muscovado sugar was made on all the estates having machinery, and there was a ready sale for it locally.

A portion of the peasants cane crop was also sold to the Cane Garden Co-operative Sugar Factory, Ltd., and thanks are due to Mr. T. M. Deane, the manager for the following information as to the season's work:—"This Company purchased the Cane Garden and Morning Star Estates, and improved upon the existing machinery by the installation of a six roller mill, and other improvements including a Triple effect &c.

During the cropping season 1934 the Company purchased from peasant growers 827 tons of sugar cane paying therefor 11/- per ton delivered at the Factory.

Due to lateness of completing the machinery the crop was commenced on the 16th April 1934, and a large bulk of the cane from this side of the island had already been sold.

From the above quantity of sugar cane there was exported to Montreal 19,561 gallons of syrup, besides the quantity kept back for local consumption.

Including the amount of syrup exported as well as that held back for local consumption the extraction and process yielded 29 gallons of syrup to the ton of sugar cane.

The point of extraction derived from the mills was 10.34 tons of canes to the ton of sugar, on an average throughout the grinding season.

This Factory has been improved upon with the view of establishing the sugar cane industry of Nevis upon a permanent basis, with the object of being able after the completion of the improvements that will be made annually to pay the peasant planters a better price for their canes.

It is seriously urged that the cultivation of the White Transparent cane be abandoned and the variety B.H.10(12) be substituted therefor."

Planting of the 1936 crop is in progress, but it is not likely that there will be an increase in the acreage, for while there is an increase in the Charlestown district, there is a corresponding decrease in the Windward districts.

## COCONUTS.

The coconut plantations of the island continue to do well, and were not attacked by any serious pests or diseases during the year. Practically the whole of the crop from Pinneys estate is being made into copra for export, but that from the other plantations is sold in the local market as dry or water nuts.

## LIVE STOCK.

There was no outbreak of Anthrax or any disease amongst the live stock during the year.

The two Government-owned pure-bred Zebu bulls continue in good health and condition. One is kept on the Settlement at Low Ground and the other transferred for service from estate to estate.

## GROUND PROVISIONS.

The usual ground provisions were grown by the peasants during the year, but the yam crop did not do very well on account of the dry weather in October 1934.

An increased acreage was planted in tomatoes this year, and the returns, especially from the early planting were fairly good. Originally the tomato crop was grown for export to Canada, but now the local market consumes quite a fair proportion of the crop.

## VEGETABLE BUREAU.

The Government packing house opened for operations on Dec. 1st 1933, and the first shipment was made on December 9th and the last on March 4th 1934. The total number of crates shipped to Canada was 308 crates of Tomatoes and 54 crates of sweet potatoes. The returns from the sweet potatoes were very unsatisfactory, and the suppliers sustained a loss of about 2/- per crate.

An advance at the rate of 1 cent per lb. was made to the growers on the shippable tomatoes.

During the season 22 growers supplied tomatoes to the packing house, and the total quantity received was 7,811 lbs; of which 6,412 were shippable tomatoes, giving 17.9% of culls, which, though less than that of last season, is still considered high.

All the shipments were made to St. John, and while the early shipments were sold at fairly good prices, later in the season prices were very low. The average nett price to the growers was one and a half cents per lb.

Tomatoes are not grown in Nevis as a regular crop, but chiefly between young canes, so figures as to yield per acre of shippable tomatoes are not available; nor is the crop grown chiefly for export as a fair proportion of the crop is disposed of in the local market at better prices than that realised from shipments, and during the past two seasons it is only the overflow from the local market that finds its way to the packing house.

The following table shows the results of the season's operations:—

| | Receipts | Expenditure |
|---|---|---|
| Nett Proceeds account sales .. .. | £51 9 2 | |
| Packing material crates &c .. .. | | £16 8 0 |
| Cold Storage and Levy .. .. | | 3 5 2 |
| Labour & shipping expenses .. .. | | 12 6 10 |
| Advance on Tomatoes .. .. | | 13 11 3 |
| Profit for season .. .. .. | | 5 17 11 |
| | £51 9 2 | £51 9 2 |

## PURCHASING OF PEASANTS' COTTON AND GOVERNMENT GINNERY.

Purchasing of the peasants' cotton crop was undertaken again this year as in the past. An advance at the rate of 4 cts. per lb., was paid on clean Sea Island cotton delivered at the cotton house. Purchasing was carried out at the Vegetable Packing house and the cotton was ginned at the Government Ginnery under the supervision of the Agricultural Instructor.

The total quantity of cotton purchased was 143,436 lbs. of seed cotton and the lint obtained from it was 40,224 lbs. which was shipped to the British Cotton Growing Association in 94 bales.

The cotton seed was sold to Spooners Factory St. Kitts, except a supply of the best which was kept for planting.

Ten bales of the cotton was sold at 1s. 2d. per lb. and 84 at 1s. 2½ which allowed a bonus at the rate of 2.6 cts. per lb. to the peasants after deducting expenses.

The total cost of the undertaking was £1,650 14. 4 and the receipts from sale of cotton and cotton seed was £2447 14. 11. leaving a profit of £797 0. 7. to be divided between the peasants at the rate of 2.6 cts. per lb. on seed cotton.

The Government Ginnery started operations on May 1st. 1934, and the total quantity of lint ginned was as follows:—

Peasants' crop .....94 bales .....40,224 lbs.

The average percentage of lint for the season was 27.6; the highest was 29.1 and the lowest 27.0.

## LAND SETTLEMENT.

Satisfactory progress is being made on the land settlements. At Low Ground 58 allotments have been taken up, and 94 at Hamilton. The plots are all being brought under cultivation and the peasants on the whole are doing satisfactory work. Cane nurseries are established in connection with the settlements, from which the allotment holders are supplied with cuttings for planting their own plots—other planting material is supplied from the experiment station.

The following is a list of the plants, seed &c. distributed during the year:—

| | Hamilton | Low Ground |
|---|---|---|
| Cane Plants cuttings .. .. .. | 60,195 | 84,520 |
| Onion Seedlings .. .. .. | 40,800 | 24,300 |
| Tomato Seedlings .. .. .. | 41,250 | 27,450 |
| Selected cotton seed lb. .. .. .. | 608 | 653 |
| Yams lb. .. .. .. .. | — | 160 |
| Seed Corn, lb. .. .. .. .. | — | 2 |
| Peas and Beans, lb. .. .. .. | — | 2 |
| Grafted Mangoes .. .. .. | 7 | — |

Work in connection with the improvement of the pasture at Low Ground was continued during the year. The paddocks were gone over and the new growth of Acacia cut and the roots stumped out. The large catchment cistern was repaired; from which the water is pumped into two storage cisterns. It is calculated that this water supply will meet the requirement of the stock in the paddocks. One of the pure-bred Zebu bulls owned by the Government is now stationed at Low Ground. Only slight repairs were done to the roads during the year. The sub-division of Hamilton is not yet completed, but the plots are being taken up almost as soon as they are surveyed, and development work in connection with roads &c., is progressing satisfactorily.

## AGRICULTURAL EDUCATION.

At one or two schools fairly good work is being done, but on the whole work on the school gardens is very much neglected.

## AGRICULTURAL MATTERS.

The Agricultural Instructor pays regular visits to the estates and peasants' plots in the different parts of the island and generally is in close touch with matters of agricultural interests to the island. The land settlements continue to receive a great deal of his attention.

The Agricultural Instructor is Honorary Secretary of the Agricultural and Commercial Society, which also functions as the Local Cotton Growers Association. Seven meetings were held during the year and the following were the chief matters discussed:—Matters *re* the West Indian Sea Island Cotton Association Conference, Branch Societies.

## OFFICIAL VISITS.

His Excellency the Governor, Sir Reginald St. Johnston, K.C.M.G., Mr. G. A. Jones, Commissioner of Agriculture; Mr. C. C. Skeete B.A., Assistant Commissioner; Mr. P. E. Turner, Sugar Cane Agronomist; Dr. Myers and Mr. H. Box, Entomologists in connection with the introduction of *Lixophaga diatraea;* Hon. A. C. K. Tibbits, Warden, Nevis; Mr. R. E. Kelsick, Agricultural Superintendent, St. Kitts-Nevis.

## PUBLICATIONS RECEIVED.

The following publications have been regularly received and are hereby gratefully acknowledged:—The Journal of the Imperial College of Tropical Agriculture; Journal of Agricultural Research, and Experiment Station Record, United States Department of Agriculture; Journal of the Empire Cotton Growing Corporation; Journal of the Agricultural Society, Jamaica; Report of the Local Department of Agriculture, Barbados; Report of the Experiment Station, Porto Rico; Report of the Agricultural Department, and the Agricultural Bulletin, Bermuda; Climatological Report, San Juan, Porto Rico.

## REPAIRS TO BUILDINGS.

No repairs were done to the buildings during the year.

## STAFF CHANGE.

There was no change of staff during the year.

## METEOROLOGICAL RETURNS.

The total rainfall for the year was 54.06 inches, which is 7.60 inches less than that of 1933.

Rain fell on 136 days during the year, and the heaviest fall recorded for any one day was 3.26 inches which occurred on November 5th, 1934. The following tables show the monthly rainfall at the Experiment Station for the year under report, and also that for the past twenty-nine years—1906-1934.

| Month 1934 | Rainfall Inches | No. of days on which rain fell | Maximum fall for any one day |
|---|---|---|---|
| January .. .. | 5.50 | 14 | 1.70 (4th.) |
| February .. .. | 1.79 | 6 | 0.70 (12th.) |
| March .. .. | 3.92 | 15 | 0.73 (29th.) |
| April .. .. | 0.45 | 3 | 0.22 (4th.) |
| May .. .. .. | 2.09 | 5 | 1.17 (10th.) |
| June .. .. .. | 3.04 | 9 | 1.15 (11th.) |
| July .. .. .. | 6.69 | 14 | 1.25 (23rd.) |
| August .. .. | 6.13 | 16 | 1.46 (2nd.) |
| September .. .. | 6.65 | 13 | 2.60 (17th.) |
| October .. .. | 1.77 | 10 | 0.45 (29th.) |
| November .. .. | 8.48 | 13 | 3.26 (5th.) |
| December .. .. | 7.55 | 18 | 1.73 (4th.) |
| | 54.06 | 136 | |

## TEMPERATURE

Readings of the Maximum and Minimum and the Wet and Dry Bulb thermometers are taken daily at the station at 9 a.m. and at 3 p.m. The mean Maximum temperature for the year was 84.9 F. and the mean Minimum 73.9 F.

The highest Maximum was 89 F. registered on August 15th. and Oct. 15th. and the lowest minimum was 65 F. on Feb. 8th, March 26th, and April 3rd. The mean average temperature for the year was 82.0 F. and the mean monthly range was 11.0 F.

## RAINFALL AT THE EXPERIMENT STATION, NEVIS, FOR THE PAST TWENTY-NINE YEARS 1906—1934.

| Year | Jan. Ins. | Feb. Ins. | Mar. Ins. | Apl. Ins. | May. Ins. | June. Ins. | July. Ins. | Aug. Ins. | Sept. Ins | Oct. Ins. | Nov. Ins. | Dec. Ibs. | Total. Ins. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1906 | 3·28 | 2·22 | 1·71 | 2·19 | 3·49 | 7·30 | 4·11 | 2·94 | 18·93 | 3·10 | 3·42 | 6·67 | 60·11 |
| 1907 | 3·22 | 2·32 | 1·23 | 1·08 | 3·30 | 4·12 | 4·86 | 2·61 | 3·76 | 6·92 | 2·54 | 7·46 | 43·45 |
| 1908 | 2·58 | 1·70 | 7·16 | 2·18 | 4.24 | 2·83 | 3·31 | 5·02 | 6·98 | 1·41 | 6·93 | 6·10 | 50·50 |
| 1909 | 3·86 | 3·46 | 0·96 | 2·72 | 1·62 | 9·52 | 4·52 | 8·71 | 3·46 | 7·38 | 2·41 | 2·74 | 50·69 |
| 1910 | 5·24 | 3·82 | 1·33 | 0·44 | 1·08 | 4·21 | 2·80 | 7·10 | 7·00 | 1·86 | 3·32 | 4·68 | 41·91 |
| 1911 | 6·38 | 2·78 | 2·32 | 4·02 | 4·08 | 0·92 | 2·72 | 2·31 | 5·30 | 3·58 | 2·80 | 8·84 | 46·08 |
| 1912 | 3·84 | 0·68 | 2·66 | 4·20 | 0·79 | 2·51 | 3·56 | 3·46 | 3·19 | 5·25 | 6·43 | 2·85 | 39·42 |
| 1913 | 7·18 | 1·96 | 4·14 | 0·81 | 4·47 | 2·23 | 1·77 | 4·92 | 3·59 | 3·89 | 4·41 | 3·36 | 42·64 |
| 1914 | 3·40 | 2·74 | 3·10 | 2·52 | 6·29 | 2·65 | 5·16 | 1·72 | 2·20 | 1·17 | 12·41 | 4·16 | 53·55 |
| 1915 | 4·10 | 2·03 | 0·28 | 5·65 | 2·79 | 2·52 | 8·11 | 4·31 | 4·71 | 5·88 | 5·37 | 5·89 | 52·10 |
| 1916 | 4·53 | 3·99 | 2·19 | 0·75 | 3·82 | 2·07 | 14·54 | 7·81 | 2·00 | 10·86 | 6·74 | 1·74 | 46·04 |
| 1917 | 1·39 | 3·28 | 2·57 | 1·00 | 4·27 | 6·73 | 3·61 | 1·02 | 8·18 | 5·00 | 2·11 | 2·09 | 44·10 |
| 1918 | 2·18 | 8·27 | 2·75 | 2·59 | 2·14 | 2·02 | 4·08 | 5·12 | 6·21 | 6·36 | 10·98 | 2·28 | 53·98 |
| 1919 | 2·22 | 1·16 | 1·33 | 2·79 | 2·10 | 2·29 | 4·02 | 1·66 | 2·10 | 8·41 | 7·22 | 2·89 | 38·22 |
| 1920 | 3·71 | 2·86 | 1·25 | 0·02 | 1·22 | 2·22 | 1·79 | 4·51 | 6·05 | 6·76 | 3·30 | 1·39 | 38·18 |
| 1921 | 5·84 | 2·79 | 3·86 | 1·40 | 0·82 | 0·80 | 4·94 | 6·58 | 1·20 | 7·34 | 3·66 | 3·95 | 46·18 |
| 1922 | 1·75 | 1·80 | 4·71 | 3·33 | 1·95 | 3·09 | 4·05 | 3·88 | 6·84 | 4·27 | 2·14 | 5·81 | 43·62 |
| 1923 | 1·51 | 2·41 | 5·42 | 2·04 | 0·54 | 5·62 | 1·85 | 2·63 | 1·16 | 5·28 | 1·23 | 3·16 | 32·74 |
| 1924 | 2·16 | 3·29 | 0·05 | 2·49 | 1·58 | 2·48 | 1·50 | 21·35 | 4·05 | 5·11 | 3·57 | 4·71 | 58·64 |
| 1925 | 2·65 | 0·99 | 1·49 | 1·06 | 1·64 | 1·92 | 3·53 | 4·81 | 4·12 | 6·94 | 2·74 | 0·31 | 32·20 |
| 1926 | 2·08 | 1·97 | 1·78 | 3·42 | 11·77 | 2·92 | 3·89 | 4·94 | 6·24 | 7·15 | 3·62 | 6·59 | 56.37 |
| 1927 | 4·44 | 1·46 | 4·01 | 2·79 | 9·32 | 2·60 | 6·52 | 3·48 | 4·48 | 10·05 | 5·69 | 1·22 | 56·06 |
| 1928 | 2·87 | 2·10 | 3·21 | 3·78 | 1·31 | 3·96 | 4·06 | 2·59 | 1·98 | 5·84 | 4·07 | 4·37 | 40.17 |
| 1929 | 3·92 | 2·52 | 5·38 | 2·12 | 3·10 | 2·58 | 6·95 | 5·21 | 2·69 | 3·45 | 5·07 | 5·57 | 48.56 |
| 1930 | 9·05 | 0·63 | 0·34 | 1·73 | 1·66 | 2·83 | 2·53 | 2·06 | 3·28 | 2·21 | 7·51 | 2·71 | 36·56 |
| 1931 | 1·00 | 1·47 | 0·37 | 4·00 | 2·13 | 3·20 | 5·68 | 6·59 | 6·91 | 5·90 | 6·83 | 3·89 | 48·00 |
| 1932 | 9·11 | 1·85 | 1·83 | 1·92 | 6·88 | 4·28 | 5·98 | 8·70 | 3·28 | 8·70 | 8·74 | 6.38 | 67.65 |
| 1933 | 3·19 | 1.72 | 2·39 | 2·01 | 3·20 | 4.78 | 8·45 | 4·24 | 10·66 | 4·29 | 10·68 | 5·87 | 61·66 |
| 1934 | 5·50 | 1·79 | 3·92 | 0·45 | 2·09 | 3·04 | 6·69 | 6·13 | 6·65 | 1·77 | 8·48 | 7·55 | 54·06 |

The average rainfall for the past twenty-nine years was 47.70 inches.
Rainfall during hurricane of September 12th, 1928 not available.

# Report of the Agricultural Instructor Anguilla

**For the Period 1st January to 31st December, 1934**

## WEATHER CONDITIONS.

The total rainfall for the year 1934 recorded at the Demonstration Plot was 43.30 inches, which is 12.94 inches less than that of last year. Rain fell on 106 days during the year and the highest fall recorded for any one day was 2.70 inches on the 24th August.

The following table shows the monthly rainfall at the Demonstration Plot for the year under review.

| Month. | Rainfall Inches. | No. of days on which rain fell. | Maximum fall. Inches. | Date. |
|---|---|---|---|---|
| January ... ... | 5·00 | 10 | 1·80 | 3rd |
| February ... ... | 1·50 | 4 | 0·60 | 6th |
| March ... ... | 2·10 | 7 | 0·70 | 28th |
| April ... ... | 2·26 | 3 | 1 60 | 5th |
| May ... ... | 3·62 | 6 | 1·50 | 11th |
| June ... ... | 1·18 | 3 | 0·50 | 10th & 16th |
| July ... ... | 3·01 | 13 | 1·50 | 5th |
| August ... ... | 5·46 | 9 | 2·70 | 24th |
| September ... ... | 8·71 | 19 | 1·30 | 15th |
| October ... ... | 4·66 | 10 | 0·90 | 23rd |
| November ... ... | 2·89 | 11 | 0·60 | 27th |
| December ... ... | 2·91 | 11 | 0·50 | 5th & 16th |
| Total ... ... | 43·30 | 106 | | |

## DISTRIBUTION OF SEEDLINGS AND PLANTING MATERIAL.

The following is a list of the planting material distributed to the peasants:

| | | |
|---|---|---|
| Sweet potato .. .. .. | 2,100 | cuttings |
| Onion .. .. .. | 9,500 | seedlings |
| Cabbage .. .. .. | 144 | „ |
| Egg Plant .. .. .. | 48 | „ |
| Tomato .. .. .. | 100 | „ |
| Yam .. .. .. | 600 | lbs. |
| Tannia .. .. .. | 180 | „ |
| Elephant Grass .. .. | 4,000 | cuttings |
| Cassava .. .. .. | 300 | „ |
| Uba Cane .. .. .. | 8,000 | „ |

Vegetable seeds were also sold to the peasants.

## DEMONSTRATION PLOT.

### VEGETABLE AND OTHER CROPS.

*Onions.* The germination of the seed was good. Seedlings were sold locally and also in St. Martin. At the time of the Agricultural Instructor's temporary transfer to St. Kitts the crop looked healthy, was free of insect pests but was suffering from drought.

*Lima Beans.* Trials were again made with a bush variety and the results were satisfactory.

*Cabbage.* On account of the severe drought the heads were not as large as those of last year. There were no crickets or other pests this season.

*Tomato.* The leaf eating caterpillar was very destructive to the crop throughout the island.

*Egg Plant.* Owing to the dry weather the fruit obtained was small.

*Soya Beans.* No success was obtained with this crop

*Velvet Bean.* The trial with this crop gave satisfactory results and a supply of seed was obtained for a more extended trial.

*Cotton.* The leaf eating caterpillar did no damage to the crop. Beetles and cut worms were present and were hand picked.

## THE COTTON INDUSTRY.

34,881 lbs. of lint were produced from the 1933—34 crop. This was 16,114 lbs. more than the crop of the previous season. The 1934—35 crop is estimated at 27,000 lbs. lint. The quality of the lint has improved and the seed for planting the island's crop was again supplied from Mr. Carter Rey's ginnery where it had been carefully hand picked. The damage done to the crop this year by the Pink Bollworm was not as severe as that of the previous season.

The seed multiplication plot was again carried on and was planted on Mr. Rey's estate at the Valley. Seed for planting the plot was obtained from the Agricultural Superintendent at St. Kitts.

*Antilles Cotton.* This is a strain of perennial cotton from Carriacou introduced for trial by the Commissioner of Agriculture. A plot of 2/5ths acre in area was grown at the Cove estate. The plot was planted on the 24th August but as a result of the drought the plants made poor growth.

The rainfall during the cotton growing season is given below:

| | | |
|---|---|---|
| August .. .. .. .. | 5.46 | inches |
| September .. .. .. .. | 8.71 | „ |
| October .. .. .. .. | 4.66 | „ |
| November .. .. .. .. | 2.89 | „ |
| December .. .. .. .. | 2.91 | „ |
| January, '35 .. .. .. | 3.37 | „ |
| Total .. .. .. | 28.00 | inches |

## LAND SETTLEMENT SCHEME.

The settlers are working their plots quite well and are paying their purchase instalments satisfactorily. One house has been erected by a settler.

## STOCK.

The Government owned pure bred Berkshire boar served 16 sows during the year.

Mr. Rey's pure bred Holstein bull and half bred heifer, which were imported from the Government Stock Farm in Trinidad, remain in good condition.

The other livestock on the island were in fair condition during the year.

## AGRICULTURAL EDUCATION.

School children were shown around the Demonstration Plot and the method of transplanting seedlings of onion and other crops were demonstrated by the Agricultural Instructor.

## OFFICIAL VISITS.

During the year visits were paid to the Demonstration Plot by His Excellency the Governor Sir Reginald St. Johnston, K.C.M.G., the Captain and six officers of H.M.S. Dundee, Mr. R. E. Kelsick, Agricultural Superintendent, Mr. K. S. Lockhart, Auditor, Dr. MacFadyen, Magistrate, and Dr. H. MacDonald, Acting Magistrate.

# Imperial College of Tropical Agriculture

The College is situated at St. Augustine, Trinidad, amid beautiful and healthful surroundings. It offers
Three Year Diploma Course and Post-Graduate and Special Courses, with facilities for research and training in Tropical Agriculture.

*Chairman of Governors:*

SIR JAMES CURRIE, K.C.M.G., K.B.E.

*Principal:*

SIR GEOFFREY EVANS, M.A., C.I.E.

*ADVISORY STAFF.*

| | |
|---|---|
| G. A. JONES, Dip. Agr. (Bangor) .. | Commissioner of Agriculture. |
| C. C. SKEETE, B.A. .. .. | Assistant Commissioner of Agriculture. |
| S. C. HARLAND, D.Sc., F.L.S., F.E.S. .. | Cotton Adviser. |
| P. E. TURNER, M.Sc., F.I.C. .. | Adviser in Sugar-cane Experiments to the Commissioner of Agriculture. |
| J. G. MYERS, Sc.D., F.E.S., F.Z.S. (attached) .. | Biological Control Research Officer. |
| H. E. BOX, F.E.S. (attached) .. | Entomologist. |

*PROFESSORIAL STAFF.*

| | |
|---|---|
| R. C. WOOD, M.A., Dip. Agr. .. | Professor of Agriculture. |
| E. E. CHEESEMAN, M.Sc., A.R.C.S. .. | Professor of Botany and Genetics. |
| F. HARDY, M.A., Dip. Agr. .. .. | Professor of Chemistry and Soil Science. |
| C. Y. SHEPHARD, B.Sc. (Econ.) .. | Carnegie Professor of Economics. |
| H. R. BRITON-JONES, D.Sc., Ph.D., D.I.C., A.R.C.S. .. .. | Professor of Mycology and Bacteriology. |
| Vacant .. .. .. .. | Professor of Entomology. |
| A. M. ADAMSON, M.A., B.Sc. .. | Senior Lecturer in Entomology (in charge). |
| F. W. URICH, F.E.S., C.M.Z.S., V.D. .. | Assistant Professor of Entomology. |

*LECTURERS.*

| | |
|---|---|
| D. D. PATERSON, B.Sc. .. .. | Reader in Agriculture. |
| N. WRIGHT, A.R.C.S., B.Sc. .. .. | Lecturer in Botany. |
| D. W. DUTHIE, M.A., B.Sc. .. .. | Lecturer in Chemistry. |
| R. E. D. BAKER, B.A. .. .. | Lecturer in Mycology and Bacteriology. |
| J. R. DICKSON, O.B.E., M.B., B.Sc., D.Ph | Tropical Sanitation and Hygiene. |
| J. G. DAVIES, Dip. Agr., A.I.C.T.A. .. | Sugar Technologist. |
| H. V. M. METIVIER, O.B.E., B.Sc., M.R.C.V.S. (Trinidad Dept. of Agr.) | Lecturer in Veterinary Science. |

*SPECIAL RESEARCH STAFF.*

| | |
|---|---|
| C. W. WARDLAW, Ph.D., D.Sc., F.R.S.E | Officer-in-Charge, Low Temperature Research Station. |
| E. R. LEONARD, B.Sc., A.R.C.S .. | Plant Physiologist, Low Temperature Research Station. |
| F. J. POUND, B.Sc. .. .. .. | Officer for Cacao Research. |
| E. E. PYKE, B.Sc., A.R.C.S. | Officer for Cacao Research. |
| J. A. MCDONALD, Dip. Agr., A.I.C.T.A. | Officer for Cacao Research. |

*Editor of College Journal, Librarian and Registrar.*

G. G. GIANETTI, M.A., DIP. AGRIC. (ECON.)

# TROPICAL AGRICULTURE.

**The Journal of the Imperial College of Tropical Agriculture.**

---

Published monthly at Trinidad, B.W.I., "Tropical Agriculture" contains valuable original articles dealing with sugar, cacao, coffee, tea, cotton, copra and other tropical products. The information which it contains is of an essentially practical character.

---

**Annual Subscription Rates.**

| British Empire | Other Countries |
|---|---|
| (6d. per copy.) | (7½d. per copy.) |
| 6/- post free. | 7/6 post free. |

---

Specimen copies sent free on request.

*The Editor,*

"Tropical Agriculture,"

**ST AUGUSTINE, TRINIDAD, B.W.I.**


ADVOCATE Co., LTD., —Printers & Bookbinders to the Government of Barbados.